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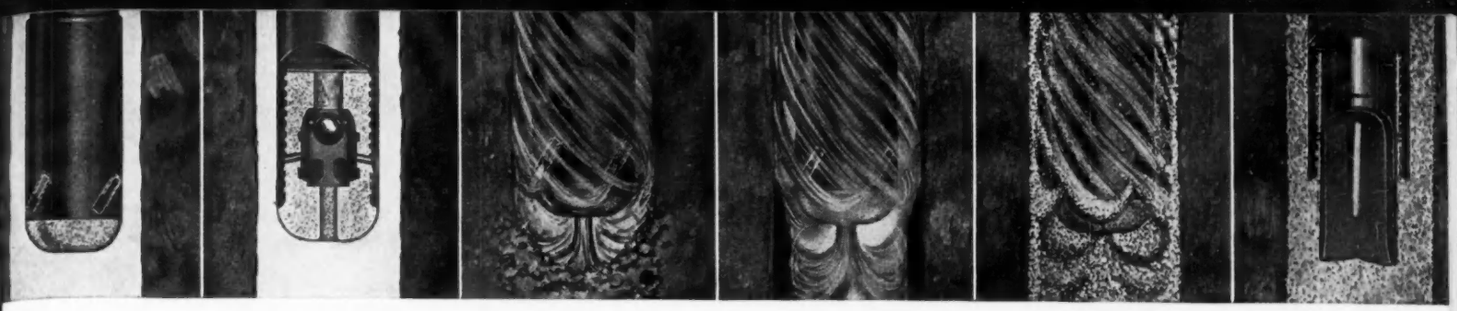

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WASH-DOWN WHIRLER
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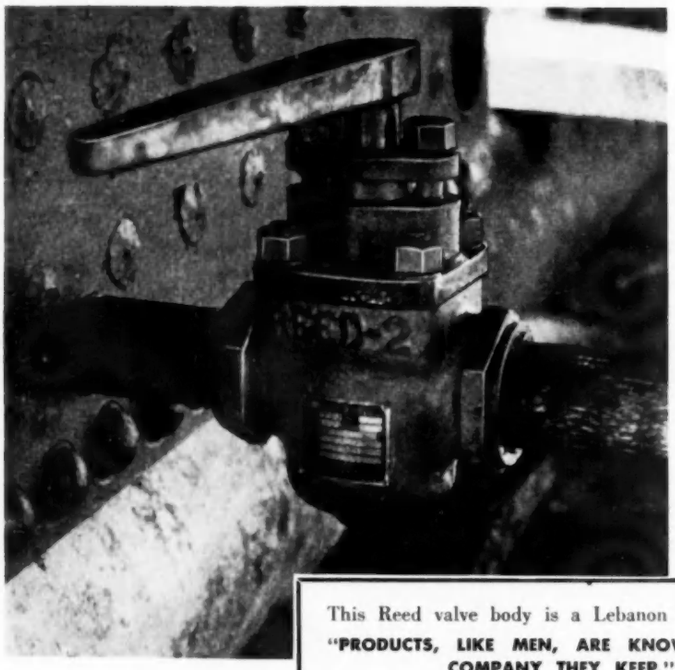

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"PRODUCTS, LIKE MEN, ARE KNOWN BY THE COMPANY THEY KEEP."

THERE is nothing "special" about the 2-inch Reed valve shown in the picture. It's just a regular Reed valve operating on boiler blow down service. 350 pounds of steam pressure continuously.

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Looking Ahead

WITH THE EDITOR

DIVIDENDS ON OIL and blitzkriegs on nature don't mix, declares Frank Phillips, of Phillips Petroleum Company, in one of several thought-provoking articles to be published next week in THE OIL WEEKLY'S Production Progress Number. We already know far more about producing oil than we do about it, he continues, in asserting that aid from natural forces is ours for the asking, but that few recognize this opportunity as having great cash value. Withdrawal expenses which accompany natural flow are so relatively insignificant as compared with artificial lifting methods, that no oil operator should ever ignore nature's offer to do this lifting job for him, the author states. "Though oil operators frequently are accused of waiting for emergency situations to awaken them, I trust that this will not be required to portray the possibilities in applying to production operations the technical knowledge already at hand, as well as that yet to be discovered," warns Phillips.

"THE ECONOMIC LIMIT at which the average prorated well can be produced has been reached in most states," a mathematical analysis of the average prospects for profit in each of the past five years will assert. There has been much talk of diminishing revenues from producing wells, but this will be the first published attempt to measure the trend and its current degree of seriousness. Its conclusions are not short of startling, and it warns of the approach of a disastrous financial condition unless the downward trend is abated.

WIDER WELL SPACING is the logical solution to the diminishing revenue problem, another article will point out. Adoption of wider well spacing, it will be said, would reduce disproportionate rates of drilling, would lessen capital investment per acre, and thereby permit return rates offering reasonable payout periods. The article warns that "action is the only thing that ever accomplished a job, so it behooves each oil man to place his efforts behind a concerted planned economy program that will avert the disastrous financial condition certain to arrive if the diminishing revenue returns trend is permitted to continue unabated."

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

THE OIL WEEKLY

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The Oil Man's Calendar

SEPT. 9–13	American Chemical Society, Detroit.
18–20	National Petroleum Association, Atlantic City, N. J.
OCT. 4	Western Petroleum Refineries Association, Regional Meeting, Wichita.
7–10	American Gas Association, Atlantic City, N. J.
7–11	National Safety Congress and Exposition, Chicago.
16–18	Independent Petroleum Association of America, Dallas.
17–18	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles.
25	Western Petroleum Refiners Association, Regional Meeting, Shreveport.
31–NOV. 2	Texas Mid-Continent Oil & Gas Association, Ft. Worth.
NOV. 1	California Natural Gasoline Association, Los Angeles.
11–15	American Petroleum Institute, Chicago.
1941 APR. 2–4	American Association of Petroleum Geologists, Houston.
24–25	National Petroleum Association, Semi-Annual Meeting, Cleveland.

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THE LARKIN NEO-SEAL is easy to install . . . pulls easier . . . can be reset oftener without pack-off replacement. The fast, trouble free money-saving service it gives makes it "aces" with operators and field men everywhere.

THE OIL WEEKLY

JULY 22, 1940

VOLUME 98 NUMBER 7

The Week's Panorama

IN looking ahead toward the heating-oil season next winter, and in recalling the lesson the industry should have learned from its experiences in 1939, there are a number of interesting points that oil men might spend a little time thinking about.

Studies made by Fred Van Covern, director of statistics for the American Petroleum Institute, indicates that there will be an average of 2,150,000 home-heating oil burners in use next winter, an increase of about 13 percent. Should the coming winter be one of normal temperatures (the average of the past 10 seasons), Van Covern estimates that burning oil demand will be approximately 108,000,000 barrels, or 9 percent greater than the record consumption of the past winter when severe cold weather brought a sharp growth.

• • • It will be recalled that the 38,000,000 barrels of gas oil and distillate fuels in storage at refineries and terminals on September 30, 1939, proved inadequate to meet consumption requirements, and that it was necessary to process approximately 6,000,000 barrels of additional furnace oils above the normal expectancy. It now appears that in processing this additional heating oil that approximately 16,000,000 barrels of gasoline had to be produced when there was no market for it. This caused gasoline stocks to rise to record levels, and they are still excessive.

• • •In Van Covern's opinion, 48,000,000 barrels of furnace oil in storage on next September 30 would result in a more desirable economic stock level during the coming winter. The higher level would prevent a scarcity of fuel oil supply such as threatened in certain areas during the past winter, and thus would avert the necessity of exceptionally high winter refinery operations to meet the demand and the consequential unwanted growth in gasoline stocks.

• • •The way to build up the burning-oil stocks and at the same time prevent further additions to the already excessive gasoline stocks is to adjust refinery yields during the current summer—now—so that larger output of furnace oils will be obtained.

• • • Next Saturday, July 27, Texans will vote in a primary election on two offices of great importance to the oil industry. Since it is the state's largest business and biggest tax revenue producer, it is to the interest of not only oil men but to the general public to see that it is treated fairly—otherwise oil operators might select to conduct their activities in other areas and the whole state would suffer.

The most important office so far as oil is concerned is that of railroad commissioner. Eighteen candidates are seeking the vacancy on this three-man board. The task of prorating the state's petroleum production has become the principal duty of this office, so it would not be out of line to select a man on his knowledge and understanding of oil. It is to be hoped that the successful nominee or nominees will be ones familiar with the peculiar problems of the industry, its operating and economic conditions. Above all, of course, the commissioner should be entirely honest and fair—for allocation of production quotas offers too vast an opportunity for one inclined to permit prejudiced judgments to work.

Several candidates for governor are running on a platform advocating increased tax levies on oil. While it will be the state legislature which finally passes or nullifies such measures, the influence of the governor could be an important factor.

An interesting story on the importance of the oil industry to the State of Texas appears in this issue.

• • • The increase of one half cent in the federal gasoline tax for national defense purposes, effective July 1, will cost U. S. motorists an estimated $112,000,000, the increase in annual revenue expected by the federal government. The increase in the tax to 1½ cents from 1 cent per gallon represents a 50 percent expansion in the rate.

Federal excise taxes on lubricating oil, transportation of petroleum by pipe line and on automobiles and accessories also have been increased, effective July 1. Such increases range from 11 to 25 percent. It is estimated that the increased rates in the miscellaneous automotive excise levies will yield $14,000,000 which, with the $112,000,000 of gasoline taxes, will make an additional total of $126,000,000 to be paid by U. S. highway users annually.

Will Illinois See Drastic Drop By Year's End?

EFFECT of a possible drastic decline in Illinois crude production between now and January 1, 1941, is being speculated upon in many quarters. A decrease in the state's output would be a development welcomed by heavily curtailed Mid-Continent states, as it would permit enlarged recoveries in the latter areas and thus afford a certain amount of relief from a situation steadily growing more acute.

That Illinois may have passed her peak in production and that her dominance of Mid-Continent crude markets will wane in the future, is accepted by some well acquainted with the situation there. Of course, such beliefs are based upon an assumption that no new discoveries of unusual importance will be made in Illinois during the next five months . . . a problemetical proposition, although present undeveloped fields do not now appear large.

Predictions that Illinois production will decline permanently by the first of the year are based on these factors:

1. Devonian production in the Salem field will continue its rapid decline, as drilling in the area is practically completed. Centralia Devonian production will be declining before the first of the year. These are the two largest fields in the state.

2. There will be a continuation of the persistent but gradual decline in Benoist, McCloskey, Stein and Aux Vases production in the state, with prospects for a material decrease in number of wells projected to these strata.

3. Prospects for extensive Devonian production from areas outside of Salem and Centralia are not likely, at least before the end of the year.

4. Drilling to closer pattern at either Salem or Centralia will not affect recovery, as permeability is high.

Illinois production record for the past four weeks is as follows:

June 22.....505,900 barrels
June 29.....511,850 barrels
July 6 .....527,500 barrels
July 13 .....499,200 barrels

The decrease during the last seven days was due to smaller recovery at both Salem and Centralia. The former declined from 224,500 to 211,200 barrels, while Centralia dropped from 136,750 to 125,600 barrels. Indications were that the state's output for the week ended July 20 would be in the neighborhood of 485,000 barrels.

Production Forecasts

Several curves have been plotted by various students to show the probable production of Illinois around the first of next year and while they vary, all indicate a rather heavy decline. One curve, based upon the probable drilling campaign and the known decline curve of Illinois wells, placed the January 1, 1941, production around 350,000 barrels. Another party familiar with the area recognizes the possibility that the state's output may be between 350,000 and 400,000 barrels daily by the end of the year.

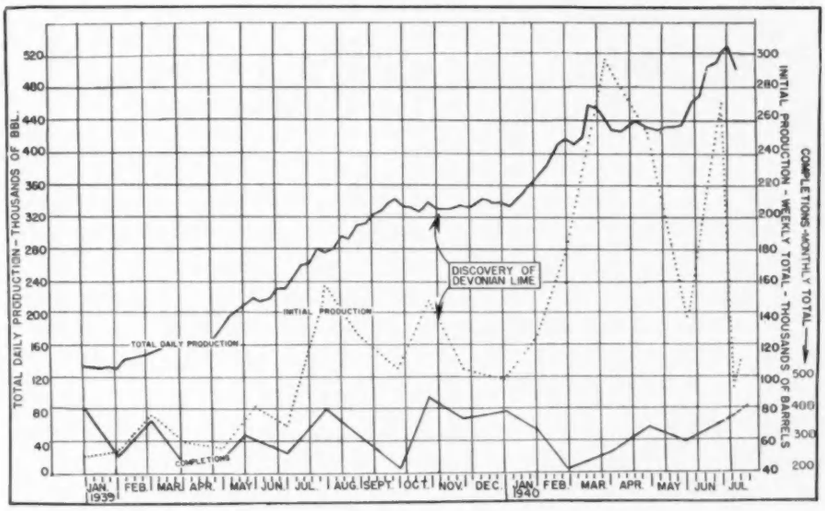
The decline of Devonian lime production has been very rapid. One company's experience was a 4.5 percent decline per day in flowing production at Salem, while another's experience was 5.17 percent daily decline. It may be said that as a general rule Devonian wells, which have been highly important factors in Illinois production during the past six months, stop flowing anywhere from one to three months after completion. When put on the pump they may flow intermittently for a short while and then must depend entirely upon pumping. All Devonian locations are expected to be drilled by January 1.

At Centralia, 72 percent of the Devonian wells are on the pump already, with the remainder ex-

History of Devonian Production in Salem and Centralia Fields

	SALEM			CENTRALIA		
WEEK ENDED	Production (Bbl. Daily)	Devonian Wells	Average Per Well Bbl. Daily	Production (Bbl. Daily)	Devonian Wells	Average Per Well Bbl. Daily
November 21, 1939	1,700	1	1,700	.....	....	....
November 28	3,640	1	3,640	.....	....	....
December 5	2,740	1	2,740	.....	....	....
December 12	3,262	1	3,262	.....	....	....
December 19	6,510	2	3,255	.....	....	....
December 26	8,840	3	2,947	.....	....	....
January 2, 1940	20,225	8	2,528	70	1	70
January 9	25,807	11	2,346	530	1	530
January 16	39,338	15	2,622	1,690	1	1,690
January 23	53,442	21	2,545	640	2	320
January 30	66,966	32	2,093	940	3	313
February 6	80,376	51	1,576	1,310	7	187
February 13	94,203	71	1,327	860	9	95
February 20	115,512	84	1,375	2,030	12	169
February 27	126,118	100	1,261	1,780	16	111
March 5	142,226	115	1,237	3,020	19	159
March 12	154,570	132	1,171	4,720	26	181
March 19	160,315	151	1,061	5,800	41	141
March 26	140,411	172	816	11,930	55	217
April 3	115,000	185	622	17,290	67	258
April 10	120,000	195	617	17,360	80	217
April 17	129,000	218	592	20,300	98	207
April 24	123,000	237	519	20,770	115	181
May 1	133,000	240	555	22,140	133	166
May 8	119,000	263	452	21,000	148	142
May 15	119,000	275	433	22,000	150	147
May 22	112,000	287	390	26,000	188	138
May 29	105,000	331	317	36,000	200	180
June 5	104,000	328	317	38,000	213	179
June 12	107,000	348	307	67,000	226	296
June 19	111,000	369	301	92,000	249	370
June 26	113,000	392	288	97,000	263	369
July 3	111,000	412	270	105,000	277	379
July 10	103,000	429	240	128,000	289	442

Trend of Illinois Production in 1939 and 1940


TOTAL DAILY PRODUCTION - THOUSANDS OF BBL.
INITIAL PRODUCTION - WEEKLY TOTAL - THOUSANDS OF BARRELS
COMPLETIONS-MONTHLY TOTAL
TOTAL DAILY PRODUCTION
INITIAL PRODUCTION
COMPLETIONS
DISCOVERY OF DEVONIAN LIME
JAN 1939 FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC JAN 1940 FEB MAR APR MAY JUN JUL

pected to be placed on lifts within the next four months.

Should a material decline in drilling take place, as anticipated, it seems to follow logically that the production decrease may be quite heavy. It is estimated that 70 percent of the Illinois Devonian lime wells slated for drilling in 1940 have been completed. Comparatively few wells are expected to be drilled to the other producing horizons.

While indications point to a drastic reduction in Illinois output during the next five months, the state has long been a fly in the forecaster's ointment with its ability to register a sharp spurt in production against a counter trend in completions. However, with both Centralia and Salem expected to decline in output, the situation has factors heretofore not at work.

Discoveries May Upset

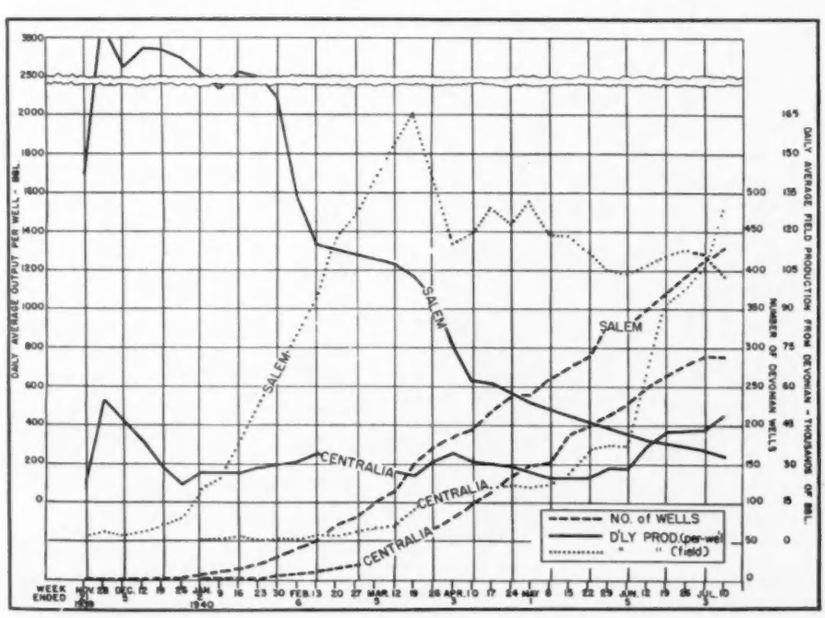
However, any such predictions are based on absence of important discoveries. At present there appears to be little in the offing, although some already found structures may prove more prolific than now anticipated.

A 200-barrel daily well has been completed in the Trenton lime in the Salem field. There is yet no evidence that this strike is of major importance, as the Trenton has rarely been prolific in other areas, and the depth (1000 feet below the Devonian) would deter many of the smaller operators in the Salem field who drilled on their "windows" to precipitate the Devonian boom. The contingency of long-lived Trenton production, forming a stabler base for the state's markets, coupled with a possible new Devonian find of considerable extent, may be worthy of contemplation. Simpson and Arbuckle possibilities are by no means exhausted. If the Trenton development incites a drilling campaign, it will likely be a rapid one, with many Devonian wells capable of quick conversion, with only a few excluded by a small pipe-size. There is a definite possibility of Devonian development in Louden, but with most of the acreage controlled by one operator there will not be a duplication of the Salem-Centralia frenzy.

The fact that the prolific north end of the Centralia field, including the Junction City extension, has been neither defined nor largely developed for Devonian production suggests the need of caution in forecasting too freely the future trend of Devonian production. As indicated by the per-well daily output curves for Salem and Centralia on Figure 2, the course of development in the two fields was opposite, in that at Salem the most prolific wells—those in Sections 20 and 29—were drilled first, with later completions yielding much lower potentials, while at Centralia exploitation of the Devonian went from the poorer wells in the southern belt to the large wells in the intermediate and northern belts, and the Junction City extension.

Implication of a heavy decline in Illinois is of industry-wide importance. There would be a shifting of markets and removal of a major disturbing factor, which could not but affect conditions favorably in other states.

History of Devonian Production at Salem and Centralia


DAILY AVERAGE OUTPUT PER WELL - BBL.
DAILY AVERAGE FIELD PRODUCTION FROM DEVONIAN - THOUSANDS OF BBL.
NUMBER OF DEVONIAN WELLS
SALEM
SALEM
SALEM
CENTRALIA
CENTRALIA
CENTRALIA
NO. of WELLS
D'LY PROD (per well)
" " (field)
WEEK ENDED NOV 25 DEC 2 9 16 23 30 JAN 6 13 20 27 FEB 3 10 17 24 MAR 2 9 16 23 30 APR 6 13 20 27 MAY 4 11 18 25 JUN 1 8 15 22 29 JUL 6 13 20 27 AUG 3 10 17 24 31 SEP 7 14 21 28 OCT 5 12 19 26 NOV 2 9 16 23 30 DEC 7 14 21 28
1939 1940

Raised Structure Guards High-Pressure Well

THE ultimate in ruggedness and refinement of high-pressure wellhead assemblies is suggested by an installation, used on an experimental basis by The Texas Company at Paradis, South Louisiana 10,300-foot distillate field.

The encircling bolted steel walkway provides a safe platform upon which to work while scraping paraffin, removing or setting storm chokes, and running bottomhole pressure tests. A rigid steel guard rail excludes livestock, braces the walkway supports, and provides protection against swirling debris at flood stages. An 18-foot mast of 2½-inch pipe, trussed against bending by 1-inch round steel stock, is used in running instruments and hoisting the heavy valves and fittings for the Christmas tree.

The Texas Company has equipped a well at Paradis, in South Louisiana, with this arrangement of steel supports and framework, which promotes safety for workers and protects from damage by cattle and flood. Wells here are 10,300 feet deep.

The tree is a 10,000-pound-test type developed during the past 9 years to fit into a completion routine evolved by the company. Over this period there have been no blowouts, failures, nor casualties while a well was being completed. The system is one of the few under which casing leaks can never cause serious trouble, as two packers are used, one of them sealing off the casing at the bottom of the well.

The tree incorporates a slip-welded casing support at the casing junction which allows operator to run casing to bottom and cement without danger of dropping casing or sealing it off at the surface. Surface connections may be installed while waiting on cement. Tension in casing can be adjusted to the operator's requirements. The oil string is cut 6 inches above casinghead flange for removal of blowout preventer. A welding flange with asbestos stuffing box is bolted tightly to the casing body and welded to the casing to afford a positive second seal which can be checked by introducing pressure to the space between stuffing box and weld through a special test connection. If weld is satisfactory tubing section is installed.

Double blowout preventers are bolted to the tubing head and completion operations are continued. At no time during the drilling or completion of a well is the well without blowout or full pressure control.

Other features of the system are a flow valve in the tubing string which closes automatically against high rates of flow—a valuable asset if surface connections are broken by flood or tornado—and a low-pressure manifold connected to the tree by pipe bends which are effective in abating turbulence.

Depth Measurements by Means of Multiple-Strand Wire Lines

By HENRY EMMETT GROSS and J. P. HAYS
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DEPTH measurement of bore holes by means of multiple-strand wire lines is described in detail, so that measurement by this means may be done precisely. Troublesome items and pitfalls are stressed. Procedures set forth have conformed with best oil field practices and, if followed, should give correct depth.

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IT is unfortunate that most beginners in the oil fields do not start their work in delicate thin-pay fields, where precise depth measurements are demanded. Too often men enter the industry in prolific thick-pay fields, where operators obtain good wells even though they are careless with depth measurements; and the impressionable first bad habits acquired frequently prove disastrous later in wells spoiled by human mistakes. Were beginners in the petroleum production industry blessed by participating in the development of those most delicate thin-pay-zone fields, such as the 3400-foot Viola pay in the Ritz Canton field of McPherson County, Kansas, the 4400-foot Miocene sand zone of the Saxet field at Corpus Christi, Texas, and the 10,000-foot thin-pay sands of the New Orleans, Louisiana, area, surely they would be so impressed that wells under their supervision never would be ruined because of faulty measurements.

Precision of Good Work

One of the authors drilled nine wells along the Voshell trend of Reno and McPherson counties, Kansas, and on only one well was the discrepancy of depth measurement between rotary and cable tools greater than 1½ feet. This was a 2½-foot discrepancy on a well in the Ritz Canton pool. Completion depths were from 3300 feet to 3500 feet, and stretch in the drill pipe was ignored because the stretch at this depth amounted to less than 1 foot. Previously he had cared for casing and depth measurements on an equal number of wells in the Gray County and Wheeler County areas of the Texas Panhandle, with equal precision. The tolerance between the various methods of depth measurement should be 1 foot in the first 4000 feet, and should not increase more than 1 foot for each additional mile of depth. Greater discrepancies show poor workmanship. Well-depth measurements should be made with surveying accuracy.

Only Cables Give True Depth Directly

The cable is always under full tension of its own weight as it is being lowered into the hole; therefore, no correction by "Hookes' law"* need be applied when stringing in. Conversely, pipe usually is measured as it stands on the rack in the derrick or as it lies outside the derrick; hence, when depth is measured with pipe, the distance must have a correction added to it for elongation from its own weight, if true depth is desired.

The difference between the elongation of 11,000 feet of steel suspended in air and the same amount of steel suspended in water is only 8 inches.[1] Hence, if the bailer is at the bottom of an empty hole and a copper-wire reference flag is inserted through the sand line at the well head, no correction would be needed for bouyancy should the hole be loaded with liquid.

Elongation due to temperature customarily is ignored in depth measurements. As the temperature coefficient of expansion of various types of steel is very nearly the same, there would be but little discrepancy between multiple-strand wire-line and drill-pipe measurements due to this factor.

Standard rigs, cable-tool drilling machines, and spudders employ two multiple-strand wire lines for drilling a well. When depth measurement of the hole is desired, it is both time-consuming and impractical to measure the entire length of the wire line necessary to reach to total depth. The proper procedure is to measure very carefully the distance over the derrick between "fixed points" at the wire-line spool and at the well head. This distance over the derrick is the "yardstick" for subsequent depth measurements. The measurement over the derrick best is obtained in calm weather, preferably about sunrise.

Equipment for Measurement with Multiple-Strand Wire Lines

In order to make satisfactory depth measurement of the well, the following equipment should be available:

a. 100-foot steel tape—graduated in tenths and hundredths (figures to be readable; never use a spliced tape).
b. Steel refill for tape.
c. Several small water-color paint brushes.
d. Several 10-cent cans quick-drying white enamel.
e. Two rolls of friction tape or adhesive tape.
f. Good flashlight and spare parts.
g. A driller's 5-foot stick (exactly 5 feet).
h. Soft-rope flags.
i. Carpenter's square.

Taping Over with Sand Line for a Cable-Tool Depth Measurement

Any time after the well is over 500 feet deep, the derrick may be taped over, as this distance over the derrick is the "yardstick" for subsequent depth measurements. At lesser depth it is difficult for the driller to stop the sand line at an exact point. The distance over the derrick should be taken at a time that will not interfere with drilling progress. Start measuring over the derrick with the bailer at least 300

* A good reference to Young's modulii showing variations between wire line and pipe may be found in *Catalogue C*, p. 233, Union Wire Rope Company, Kansas City, Mo., 1936; and for Hookes' law, see reference 1 in the bibliography.

feet off bottom, so that the bottom of the hole is not encountered before the derrick has been taped over. Referring to Figure 1, observe that all measurements on the sand line are made back at the sand reel instead of at the well head, the reason for which is to be explained later. A hair-line ring not over 1/16-inch wide (Figure 1, item 4) is painted on the sand line at a point near the sand reel (Figure 1, item 2). The steel tape (Figure 1, item 7) is tied securely to the sand line, with the zero mark precisely at the top of this hair-line paint mark. A soft-rope flag (Figure 1, item 5) is tied about 4 inches below the paint mark. The bailer now is let down the hole until either the case end of the steel tape is at hand near the sand reel or the zero end is almost to the crown. Caution should be exercised not to allow the tape to pass over the crown pulley. Another hair-line paint mark is painted on the sand line near sand reel (Figure 1, item 2) and a soft-rope flag is tied 4 inches below the mark. The distance between the tops of the first and second paint marks is measured precisely, and this measurement is recorded in the notebook to the nearest 0.01 of a foot. The bailer now is brought out of the hole, until all of the steel tape is reeled in. The zero mark is checked for slippage away from the paint mark, and the steel tape is removed. The bailer is run back into the hole, until the second paint mark and flag are just off the sand reel. The zero end of the tape is tied to the top of this paint mark and, as before, a second taped interval is obtained and entered in the notebook. The zero end of the steel tape is tied to the top of the third paint mark, and the bailer lowered into the hole, until the bottom of the first paint mark (Figure 1, item 4) is exactly even with the top of the control head† (Figure 1, item 9) as shown by a carpenter's square (Figure 1, item 6). After making sure that the top of I-beam (Figure 1, item 3) of the sand-reel base is scraped clean to the steel, and that it is level, the driller's 5-foot stick (Figure 1, item 1) is held upright thereon. Where this stick intersects the sand line, another hair-line paint mark is made—the top of which coincides with the 5-foot stick. The steel tape now is drawn taut to this last paint mark; the interval is measured and recorded. Check the paint mark at the control head for slippage. With a 100-foot steel tape, 3 measured intervals usually suffice. By adding these taped intervals, the distance over the derrick from the top of the 5-foot stick to the top of the control head is obtained. All the measurements should be made to the 0.01 of a foot, or ⅛-inch, for precision. A rag tape is not tolerated. Record in, *a*, the driller's log book; *b*, on a clean board in the engine house; and, *c*, in the supervisor's notebook: "Distance from Top of 5-Foot Stick Held Vertically on Sand-Reel Base Over Crown to Top of Control Head Is Equal to — Feet." The measurement always should be recorded in feet and hundredths, and also in feet, inches, and eighths of an inch, for the convenience of the driller. This is done so that the driller and everyone else so desiring will have a record of it. If there is wind, the steel tape is secured to the sand line, at 15-foot intervals, with adhesive tape. For precaution and accuracy, the derrick may be remeasured in calm weather. Distances over the derrick should check within 0.01 of a foot. Cautions: Do not lay the 5-foot stick flat on the sand-reel flanges, and also Do Not Measure the Sand Line Hand Over Hand With a 5-Foot Stick. Adjustments of the sand reel, shifting of crown pulleys, and accidents to equipment require retaping of the derrick. Beware of steel tapes that have been stretched due to snagging on the rig.

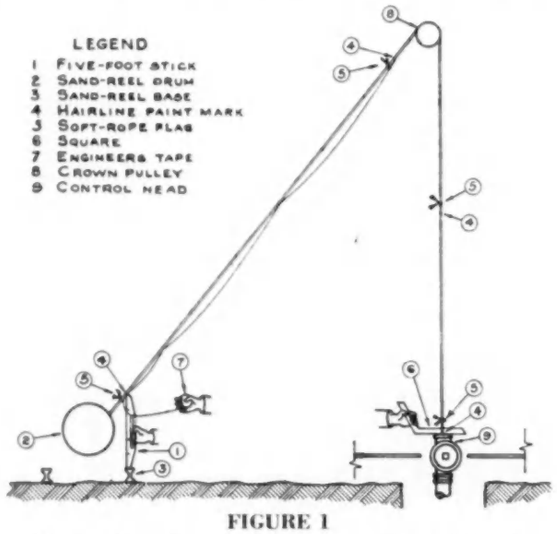

FIGURE 1
Taping Over Sand Line in Case of Control Head.

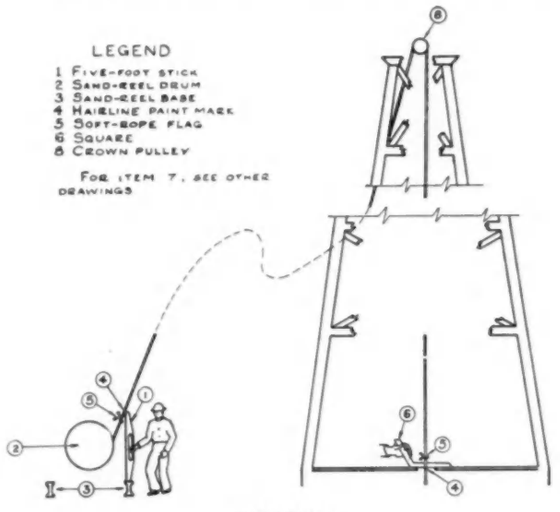

FIGURE 2
Measuring Depth with Sand Line.

Sand-Line Depth Measurement

If the intermediate paint marks and flags in Figure 1 are ignored, reference may be made to this figure for the discussion of sand-line depth measurement. Figure 2 differs from Figure 1 in but two pertinent respects: by leaving out, first, the control head which frequently is installed on the drilling well; and, second, the intermediate paint marks and flags necessary in stringing over the derrick.

Bring the bailer back out of the hole, being sure to remove all flags and all paint marks. Set the bailer down on its dart on top of the control head (Figure 1, item 9). With the 5-foot stick held upright on sand-reel base (Figure 1, item 3) and intersecting the sand line, make a hair-line paint mark (Figure 1, item 4). About 4 inches below this paint mark, tie a soft-rope flag (Figure 1, item 5). The purpose of the flags is to mark the paint marks so that they can be seen, and also for use as talleys. Paint marks, and not flags,

† It must be understood that the control head ordinarily is not put on until much deeper than 500 feet.

are used for actual measuring, because they cannot slip by rubbing on some obstruction. Start the bailer into the hole, until the bottom of the first paint mark is even with the top of the control head (Figure 1, item 9). With the 5-foot stick held upright on the sand-reel base, a second paint mark is made, and a flag tied 4 inches below it. The first flag is removed at the control head, and the bailer started on into the hole. The operation is repeated on down the hole, and the soft-rope flags gathered at the control head are tied together in groups of five. Finally, the bailer encounters bottom, but ordinarily the last paint mark has not yet reached the control head. Get the "pickup" on bottom. With the bailer exactly on bottom, make a hair-line paint mark exactly even with the top of the control head. Without moving the sand line, go back to the sand reel; and, with the 5-foot stick held upright on the sand-reel base, make a hair-line paint mark where the 5-foot stick touches the sand line. Flag this mark with soft rope; check the mark at the control head for slippage; and come out of the hole, until the last regular flag that did not go on over the derrick to the control head is at hand at the sand reel. By taking steel-tape measurements back at the sand reel until the bailer again just reaches bottom, the distance is obtained between the last regular flagged paint mark and the flagged paint mark at the sand reel when the bailer was just on bottom. Never take this distance hand over hand with a 5-foot stick, as some individuals are prone to do. The depth of the well below the top of the control head is obtained by adding the steel-taped interval just mentioned to the product of the number of flags removed at the control head multiplied by the taped distance over the derrick.

It may be observed that all taped measurements are made back at the sand reel; because in this manner all quantities are positive, and no algebraic blunders can be made because of negative quantities. Such blunders are made sometimes when the steel tape is read at the well head.

Inasmuch as all measurements were made at the top of the control head, the height of the top of the control head above the derrick floor must be deducted from the depth measurement made above in order to get the depth of the well below the derrick floor.

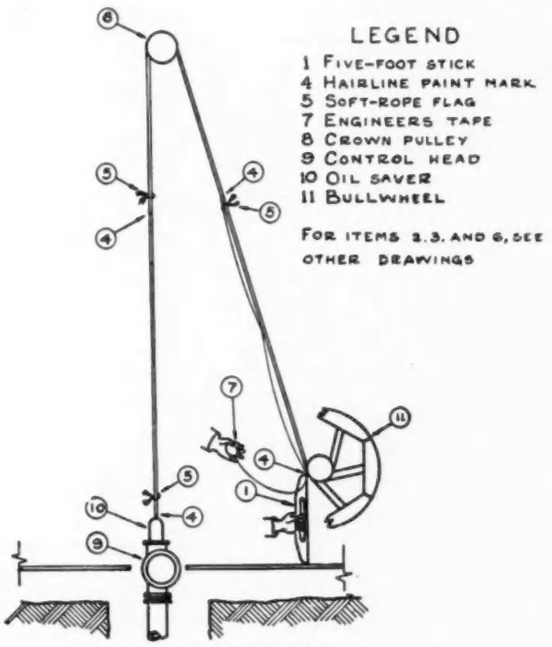

FIGURE 3
Taping Over Drilling Line in Case of Oil Saver.

The depth of a well should be measured at the convenience of the crew, and preferably in daylight during calm weather. If the sand line is new and unseasoned, and if the pay zone is being drilled, the depth of the well should be measured by stringing in completely after each run of the cable-tool bit. Unseasoned sand lines may stretch as much as 10 feet every 8 hours in a 3000-foot well. Under such conditions, reference copper-wire flags put through the sand line at some thousands of feet above the bailer dart cannot be used to eliminate excessive measuring. Unless caution is used, it is easy under these conditions to deepen a well too much.

If the sand line is old and well-seasoned, free from stretch, and the derrick measurement has been checked at least twice, then, if a copper-wire reference flag is put through the sand line 1500 feet or 2000 feet or as desired above the bailer dart, much time will be saved in measuring. Also, put a copper-wire reference flag 20 feet above the bailer, because the bailer may be changed or the claw hitch may be cut off, and a new one put on at the bailer.

Taping Over with the Drilling Line

Sometimes it is necessary or desirable to take depth measurements with the drilling line. If 20,000,000 cubic feet of gas or more per day is flowing from 7-inch casing, it is impossible to get a bailer in the hole.

In taping over the derrick on the drilling line, the procedure is the same as given under the heading "Taping Over with Sand Line for a Cable-Tool Depth Measurement," except that all measuring is done adjacent to the bullwheel drum with the 5-foot stick held vertically on the derrick floor, as shown in Figure 3. Observe that in this figure the measurement that should be taken and recorded, in, *a*, the driller's log book; *b*, on a clean board in the engine house; and, *c*, in the supervisor's notebook, is: "Distance from Top of 5-foot Stick Held Vertically on Derrick Floor at Bullwheel Drum Over Crown to Top of Oil Saver is Equal to—Feet." The measurement is to be handled in the same manner and with the same precision as described previously for "Taping Over with Sand Line for a Cable-Tool Depth Measurement." A suggested caution is to check the bullwheel shaft, and see if it is level.

Measuring Depth with Drilling Line

When it is desirable to be sure that the depth measured is actually to the bottom of the well, and not on top of possible cavings, it is advisable to string the drilling line and tools out of the hole just as the driller has completed his "screw" and is ready to come out.

When drilling a producing zone, it is very important to know total depth after every "screw" or run of cable tools; because the reservoir then is tested for contents and capacity and, also, cores may be taken. To be sure of the total depth with tools, it is important to string in completely after each screw or, in a well flowing out cuttings, after every 5 feet; because, as soon as the walking beam is connected and the tools are run, a seasoned drilling line changes as much as 5 feet in length after each screw in a 3000-foot well. It is unpredictable how much an unseasoned line will change. This variability is produced by the heavy string of drilling tools bobbing up and down on the drilling line. Another disadvantage in measuring with tools is that parts of the string are changed often, and bits are changed in from one to three "screws." Rope sockets also are changed on occasion, with at least a foot of line being cut

off during this operation. As may be gathered from previous sentences, a copper-wire flag put through the drilling line near the top of the hole when tools are on bottom is not to be used to save frequent stringing in while drilling in the oil-bearing horizon. On the other hand, such a copper flag may be used with a well-seasoned sand line if another flag is placed about 20 feet above the bailer, and the distance from this flag to the bailer dart is kept in the driller's log book and checked frequently to see that claw hitches have not been changed and different bailers put on.

Spudder Measurements

Spudders often are used to drill the pay zone of wells which have been drilled to the top thereof with rotary tools, and the depth of this operation may be as much as 4000 feet. Spudders are used also in deepening and in reconditioning; and small portable drilling units have been used for this work in Oklahoma City, where the main pay zone is at 6500 feet. When a spudder is used, there is no sand-reel base on which to hold the 5-foot (or 10-foot) stick. It is, therefore, advisable partly to bury a timber (Figure 4, item 17) for this purpose. It would be better to use a stick which would reach from item 17 to item 20, Figure 4. In like manner, if the depth is to be obtained with the drilling line and tools, a timber (Figure 4, item 15) should be buried partly as a base for the 5-foot stick (Figure 4, item 1). If measurements are made with the drilling line, the crank should be at its uppermost position, and the walking beam should be at its highest position, or the distance over the derrick will be grossly in error. Should the wristpin be put in a different hole in the crank, it will be necessary to tape over the derrick and remeasure the depth for this change. As more drilling line is run into the hole, the spring at Figure 4, item 19, causes some error, unless the derrick is taped over at half the depth of the hole.

Depth Measurements with a Portable Drilling Machine

A portable drilling machine differs from a spudder in that, for drilling, an ordinary walking beam is used, and from it the drilling line is supported by a temper screw. The discussion on depth measurements with a spudder applies to a machine, except that the position of the walking beam and crank, and the wristpin in the crank, need not be considered.

Rotary Tools—Taping Over Derrick by Means of Coring Line

It is common practice with some operators to place a weather covering over the engine and the coring line reel—which considerably interferes with measuring the distance over the derrick from the coring-reel side. For this reason, the taping is done inside the derrick at the top of the rotary table, as shown in Figure 5—and not at the reel base, as is done in the case of the sand-line reel on a cable-tool rig. The distance over the derrick is measured between the top of the rotary table (Figure 5, item 12) and the top of the 5-foot stick (Figure 5, item 1), when held vertically on the base of the coring reel (Figure 5, item 14) and at its intersection with the coring line.

The procedure for placing paint marks and soft-rope flags on the line, and otherwise making the measurement, as previously set forth in the discussion of the topic "Taping Over Derrick with Sand Line," applies to measuring the distance over the derrick with the coring line, and will not be repeated here.

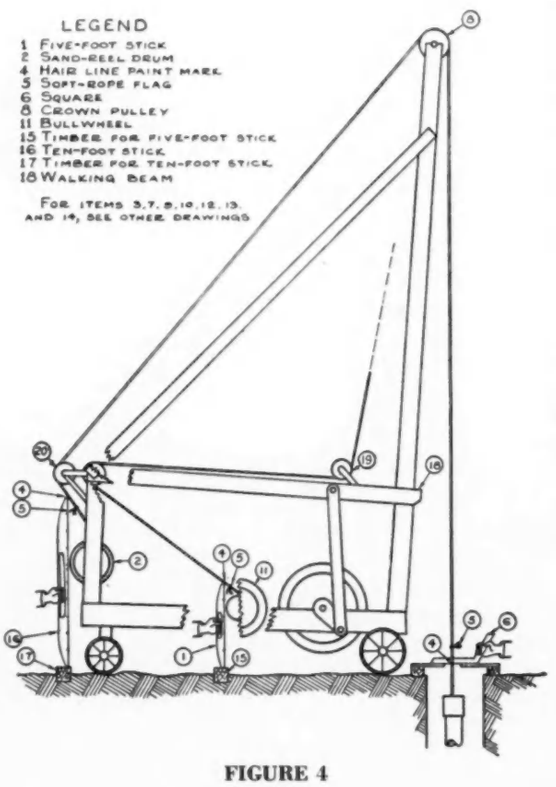

FIGURE 4
Spudder.

Depth Measurement by Means of Coring Line

After the "unit length" over the derrick has been determined carefully, the depth of the hole may be measured at any time by "stringing" the line and tools either in or out of the hole.

It is suggested that, when use of coring wire line is intermittent between coring operations and directional magnetic surveys, the depth of the hole be checked with that shown by the drill-pipe record, by "stringing in" frequently with the coring line and the survey hookup. This procedure will give assurance that the instrument is at the bottom of the hole, as determined by the "pickup" on the line, and not at the shoulder of the reduced-size core hole. Superior results may be obtained in directionally-drilled holes by being sure of the depth at which the magnetic instrument is suspended within the well during exposure of the survey units to the film. This depth should be within 5 feet of the bottom of the hole. This depth should be recorded on the survey disc, instead of the depth of the hole as shown by the drill-pipe record.

Special Measuring Devices

Three classes of service companies are operating in the oil industry, each of which employs some form of multiple-strand wire line—which, when lowered into the well, must check the depth of the hole. The classes of service are: 1, electrical well logging; 2, gun perforating; and 3, well shooting. It is important that the well depth, as shown by the automatic depth recorder of the respective unit, check with the depth of the hole, as determined by one or more of the aforementioned methods, so that the well may be completed successfully. If a discrepancy is found, it is customary to adjust the service company's depth-recording instrument to the depth determined by the engineer or driller.

Well Logging

Electrical well logging employs two different principles, each of which utilizes special types of multiple-strand cables. For the purpose of making the electrical measurements, one method uses three insulated electric

wires fabricated together to form one fabric-covered multiple core cable. The special measuring device consists of a serrated measuring sheave and spring-supported guide rollers through which the cable passes. This device is used only as a rough check of the well depth, and as a means to interpolate between tabbed copper marks (fixed markers) placed on the cable at 100-foot calibrated intervals. However, this procedure does not eliminate the errors in measurement, as this type of cable when new and unseasoned is subject to wide variation in length. However, it is understood that the service company using this equipment takes care of this matter by frequent recalibration.

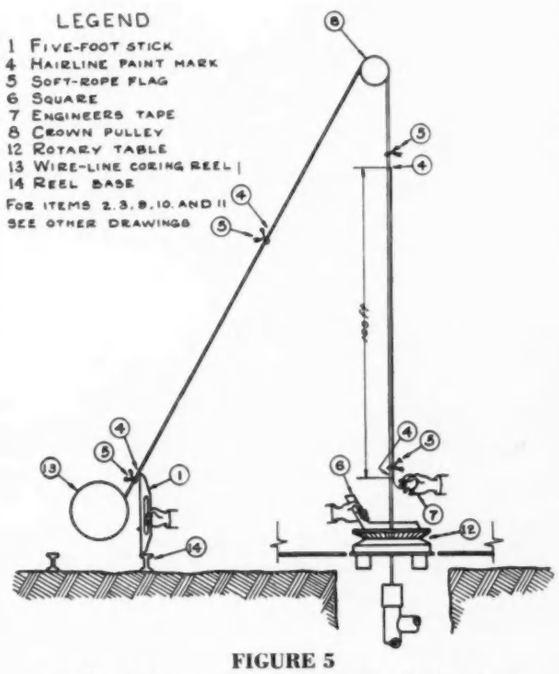

FIGURE 5
Derrick Measurement by Means of Coring Line.

The other method employs a unique device for checking the well depth. The cable, which is 5/16-inch in diameter, has a multiple-strand insulated copper-wire core sheathed by two multiple-strand steel-wire jackets spiraled in an opposing fashion so as to prevent twist. The cable is given a full wrap on the calibrated sheave, which has been grooved to fit the form of the cable. The circumference of the sheave is 9 feet, ground to 1/1000-inch accuracy, and checked occasionally with a machined template. This method effectively reduces any error caused by reduction of area of the cable under load. A "Veeder" counter is geared to the sheave for observation on the derrick floor; the measurement is transferred to the recorder in the truck by a pair of autosynchronous motors—one mechanically coupled to the sheave, the other to the camera—and the pair electrically-interlocked. An obvious advantage is that permanent stretch introduced in the cable on any run automatically is compensated on the next run, inasmuch as the measurement is obtained by rolling along the cable. Another advantage of this particular well-servicing unit is that bottom may be detected sensitively by means of the precision weight indicator.

Depth Measurement by Means of Gun-perforating Units

As the primary purpose of the gun perforator is to permit careful selection of zones in the completion of an oil well by the perforation of the casing opposite the producing horizon, it is important that the automatic depth recorder check the depth of the hole. The wire line employed on the gun-perforator unit is comparable to the sand line of a cable-tool rig—except that instead of the line having a hemp core, it has an insulated copper-wire center for conducting electricity from the batteries to the unit. The measuring device is similar to that of the electrical-logging device discussed above, except that in the gun perforator the cable is not wrapped around the measuring sheave and, therefore, it may result in a slight accumulative error due to inertia slip on the large sheave.

Depth Measurement by Means of Well-Shooter's Line

In some areas wherein it is necessary to fracture rocks of low permeability to obtain oil in commercial quantities, the well is "shot" with a charge of nitroglycerin. The torpedo for this purpose is lowered into the well on a multiple-strand wire line about 3/16-inch in diameter. The wire-line reel employs an automatic measuring device using a "Veeder" counter. When bottom is encountered, if there is discrepancy it is customary to adjust the shooter's depth reading to that determined by the cable-tool bailer.

Summary and Conclusions

There are definite relationships existing between the factors discussed under the topics in this paper. They are advanced as follows:

1. If a depth measurement of a hole is taken both by the sand line and the drilling cable, and the two measurements check within 1 foot on a 4000-foot well, a satisfactory depth of the hole is established.

2. If both cable and rotary tools are operated jointly on a well, the depth by drill pipe and wire line should check within 1 foot at 4000 feet.

3. In order to assure accuracy in making magnetic surveys, it is suggested that the coring line be "strung" into the well frequently, and checked against drill-pipe measurements.

4. As the multiple-strand wire lines used in drilling and those used with special measuring devices possess qualities innate to both, depth measurements made by the two methods should check closely.

5. Well depths determined by any of the multiple-strand wire lines common in drilling practice are subject to errors, if the specifications set forth in this paper are not followed.

6. In the case of special measuring devices, errors inherent in counting mechanisms resulting from inertia slippage and incorrect diameter of measuring sheaves and lines require adjustments to the positive and precise measurements that should be obtained with the drill pipe or cable.

7. When precise depth measurements are necessary by means of the multiple-strand wire line, it is evident that good workmanship must prevail.

8. If possible, depth measurements should not interrupt the normal course of drilling, but should be made when the crew is making a round-trip as part of the drilling operation.

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Further discussion of depth measurements, presenting in detail methods of measuring and running casing in oil or gas wells, has been written by the authors of the above article, and is scheduled for these pages in an early issue.

Who Owns Petroleum Beneath Bed of the Sea?

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IT has been known for a number of years that petroleum is to be found in paying quantities beneath the ocean floor. Commercial production was developed a number of years ago off the coast of California and in more recent years considerable production has been found in the Gulf of Mexico off the shores of Louisiana, Texas, and Mexico as well as off the coast of Russia opposite the Baku field. With one exception, however, all operations in the Gulf of Mexico have been conducted in bays or other more or less protected localities.[1] The exception is the Creole field off Cameron Parish, Louisiana, where five wells were drilled from the same platform a little more than a mile out into the open gulf.

With present equipment there is considerable doubt as to whether production in the open gulf can be deemed commercial because of the excessive losses due to storms. The depth of the water presents no particular difficulty as oil is now being produced from beneath Lake Maracaibo, Venezuela, at points where the water is 65 feet deep. Concrete piling is used for these operations and probably would be practicable for even deeper water. All along the coast of Louisiana and Texas there are numerous shoals and banks 15 to 30 miles out from shore where the water varies in depth from 15 to 30 feet. Many of these shoals and banks are thought to cover petroleum deposits as, for example, Heald Bank, 20 miles off the Texas coast and Sabine Bank, 15 miles off the Texas coast, both of which are covered with water at a depth varying from 25 to 30 feet.

While drilling operations are not feasible at the present time at this distance from the coast, it is not at all improbable that equipment eventually will be developed which will make the operations entirely practicable and profitable. Since the oil could be loaded direct from the wells into tankers, it is not beyond the realm of possibility that citizens of other nations may come into the Gulf of Mexico and attempt to produce oil from beneath these shoals and banks off the coast.

Because of the importance of petroleum, both commercially and

*This article contains the substance of a report prepared by the writer for a special committee of the Section of International and comparative Law of the American Bar Association.

from the standpoint of national defense, it would seem highly important to the United States to claim ownership of these petroleum deposits if it can do so consistently with established principles of international law. It may be noted here that a movement is now afoot in Congress to assert ownership on behalf of the federal government to all petroleum found anywhere along the seacoasts of the United States from the shore line to the territorial limits of the United States.[2] This, of course, is purely a matter of domestic law and Louisiana has countered with a statute asserting ownership of the maritime belt off its shores to a distance of 27 miles.[3] A similar bill was passed by the Texas Legislature but vetoed by the governor.[4] While this legislation was undoubtedly brought about by the internal difference as to title, it nevertheless very definitely raises questions of international law. The validity of the Louisiana act under international law has been defended as entirely proper under modern conditions[5] and criticized as being violative of established principles of international law.[6]

So far as concerns the bed of the littoral sea and its subsoil within the three-mile limit, little difficulty is encountered. Whatever may be the different views with respect to the rights of the littoral states in the waters above, the better view seems to be that the littoral state has a definite property right in the bed of the ocean and its subsoil within the three-mile limit.[7] This property right has been recognized, as a matter of municipal law, both in the United States and in England.[8]

Beyond Three-Mile Limit

Beyond the three-mile limit, however, the matter presents considerable difficulty. There can be little doubt that the United States is definitely committed to the three-mile limit of territorial jurisdiction.[9] On the other hand, the United States, in the assertion of this three-mile limit of territorial jurisdiction, has been more concerned with the water itself and the products found therein than with the ocean bed or its subsoil. It is to be remembered that the bed of the sea and its subsoil have no fixed connection with the waters above so that, in legal theory at least, the rights of the littoral state to the bed of the sea and its subsoil need not necessarily be the same as its rights with respect to the water above and the products thereof.[10] An argument could be made that the ownership of the littoral state includes the surface and subsoil of the entire continental shelf out to the point where the slope begins to the great depths of the ocean.[11] Even though a claim of ownership, to this extent, of the products of the waters above might be rejected, it does not necessarily follow that a similar claim to the land below would be. Such a claim would not conflict with the rationale of the universally accepted rule with respect to the freedom of the high seas and, of course, any operations above the surface necessary to exploit the subsoil products would be subject to that rule. Such a claim would not be without logic since the continental shelf adjacent to each nation is but a projection of its lands and is permanently attached to it. Plausible as such a claim may be, no authority has been found to support it and the theory upon which it might be based would not be universally applicable. For example, it could not be applied as between England and France since they are not separated by the great depths of the ocean but by a comparatively narrow channel.

Precedents are few and far from satisfactory. Coal and tin mines are being worked beneath the bed of the sea off the coast of Great Britain[12] and the same is true with respect to iron off the coast of France[13] and tin off the coast of Sumatra.[14] However, in none of these older cases do the operations extend beyond the three-mile limit.[15] A coal mine in Nova Scotia now extends out beneath the waters of Glace Bay for three miles and another coal mine is said to extend five miles out under the Pacific Ocean from a shaft opening into Cousino Castle at Lota, Chile.[16] It does not appear that any complaints have ever been made by foreign nations on these operations.

So far as the surface of the sea bed is concerned, there are numerous instances where the littoral state has asserted a proprietary right beyond the three-mile limit and apparently the rights thus asserted have never been challenged by other nations. The most commonly cited examples are the pearl banks off the coast of Ceylon over which Great Britain claims a proprietary right to a distance 20 miles from the shore. This precedent is inconclusive, however, since it seems clear that the proprietary right was asserted long before the rule with respect to the freedom of the open sea came into existence.[17] Mexico and Colombia both assert jurisdiction over the pearl beds beyond the three-mile limit and apparently no exception has been taken to this claim by other nations.[18] The same is true with respect to coral beds in the Mediterranean off the coasts of Algeria, Sardinia, and Sicily.[19] Oyster banks are likewise claimed by Australia, Mexico, Colombia, Italy, France, and England far beyond the three-mile limit.[20] The Bey of Tunis claims the exclusive right to sponges on a bank beyond the three-mile limit off the coast of Tunis[21] and the State of Florida regulates the taking of sponges to a distance of 10 miles from her shores.[22] In defense of such claims it is asserted that the bed of the sea beyond the three-mile limit is *res nullius* and, unlike the waters above, is subject to physical possession, and that a nation which takes effective possession of a particular portion of the bed of the sea acquires a property right therein which other nations are bound to respect.[23] The claim that such a property right is in no way inconsistent with the rule with respect to the freedom of the seas has been criticized as being only theoretically true. As a practical matter, it is urged, in order to make its possession effective a state must attempt to impose restrictions on other states which are at variance with the principle of freedom of the seas.[24] It is submitted that the criticism is not well taken. A recognition of the proprietary right of the state which has taken possession of a portion of the bed of the sea does not require submission to regulations interfering with the free use by other nations of the waters above. The fault would lie not with the claim of right to the portion of the bed of the sea but with the attempted regulation with respect to passage in the waters above.

Both Oppenheim[25] and Gidel[26] make a distinction between the bed of the sea and the subsoil beneath it. Both deny that the surface of the bed of the open sea is subject to appropriation apparently on the theory that any work carried out on the bed of the open sea necessarily interferes to some extent at least with the free use of the waters above. This basis for the distinction made, as has been pointed out above, is probably without

foundation and is not in accord with the common practice of nations. So far as concerns the subsoil beneath the bed of the open sea, both Oppenheim and Gidel admit it to be subject to appropriation and ownership so long as the occupation of the subsoil does not interfere with the free use of the waters above. Both of these writers seem to assume that any exploitation of the products of the subsoil would be by means of tunnels driven from an opening beneath the soil of the territorial limits of the littoral state and Gidel would condemn as illegal any activity on the bed of the sea in connection with the operations. If Gidel is correct in his view then petroleum beneath the bed of the high seas could not legally be reduced to possession by anyone since the petroleum can be produced only by means of operations above the surface of the subsoil and through it. It is to be doubted that any rule which would prevent the exploitation of large quantities of so valuable a commodity as petroleum would ever be accepted. On the other hand, acceptance of the view that the bed of the high seas and the subsoil thereunder is *res nullius* and subject to ownership through appropriation and effective possession would be in accord with the common practice of nations and would not be in conflict with the rule of international law concerning the freedom of the high seas. It is difficult to conceive of any situation where the presence of an oil derrick over the open sea would in any real sense be an interference with free passage over the waters. If, however, such a situation should arise it would simply be illegal to conduct the operations since the proprietary right below must always be subject to the primary right of free navigation in the waters above.

Individual Ownership

Acceptance of the view suggested raises the further question of whether a proprietary right in the petroleum beneath the bed of the high seas could be acquired by an individual or by one of the states of the Union. It would seem fairly clear that an individual could acquire no such proprietary right since such right would depend upon principles of international law and the individual is unknown to international law.[27] Whether one of the states could acquire such a right raises a somewhat difficult question of mixed municipal and international law on which different views have been expressed.[28] While the Supreme Court of the United States has never passed upon the question, it is believed that if the question ever comes before it the decision will be against such power in the states. Apart from any legal questions of municipal law practical considerations in international relations almost compel this holding. The constitution confides to the federal government the sole power to deal with foreign governments and the individual states have, so to speak, lost their international personalities. If, for example, Mexico wishes to contest Louisiana's assertion of jurisdiction 27 miles out to sea, the Mexican government would not make its representations to the State of Louisiana but would have to make them to the United States government.

It is therefore apparent that if states were permitted, as a matter of domestic constitutional law, to make claims to new territory the federal government might find itself in a very difficult position indeed in its international relations and it is not likely that our courts would lay down any rule of law which would permit such a situation to come about.

REFERENCES

[1] "Bays" present different problems from the open sea and while "bays" are generally recognized to be under the exclusive jurisdiction of the littoral state, there is considerable divergence of opinion as to what constitutes a "bay." On this question see 39 Columbia Law Review 1433 (1939) and the recent case of *People vs. Stralla, et al* (California, 1939), 96 Pac. (2d) 941.

[2] Seventy-Sixth Congress, First Session. S. J. Res. 24, S. J. Res. 92, H. J. Res. 178, H. J. Res. 181.

[3] Louisiana General Statutes, 1938, No. 55.

[4] Forty-Sixth Legislature, Regular Session, S. B. 396, vetoed by the Governor on July 8, 1939, on the ground that it was " * * unnecessary to affirm by statute Texas ownership which is and has been fully established."

[5] Loret, *Louisiana Twenty-Seventh Mile Maritime Belt*, 13 Tulane Law Review 253 (1939).

[6] 39 Columbia Law Review 317 (1939).

[7] Oppenheim, *International Law*, McNair's Fourth Edition (1928), Volume 1, Sec. 190b. *Contra*, Fauchille, *Droit International Public*, Tome 1, 2e Partie (1925), Sec. 494.

[8] The English cases are discussed in Hurst, *Whose Is the Bed of the Sea?*, British Year Book of International Law, 1923-24, page 34. For the United States see *McCready vs. Virginia*, 94 U. S. 391 (1876); *State vs. Savidge*, (Washington, 1920), 187 Pac. 1089; *Boone vs. Kingsbury* (California, 1928), 273 Pac. 797; *Alaska Gold Recovery Co. vs. Northern Mining & Trading Co.*, 7 Alaska 386 (1926).

[9] Jessup, *The Law of Territorial Waters and and Maritime Jurisdiction* (1927), page 49.

[10] Fauchille, *loc. cit. supra*, Reference 7.

[11] Such a suggestion was made by Spain in connection with fisheries. Meyer, *The Extent of Jurisdiction in Coastal Waters* (1937), page 380.

[12] Fauchille, *loc. cit. supra*, Reference 7.

[13] Gidel, *Le Droit International Public de la Mer*, Tome III (1934), page 329.

[14] *Supra*, Reference 13.

[15] Gidel, *op. cit. supra*, Reference 13, Tome I (1932) page 510.

[16] *Enquire Within*, (London) part 52, page 1448.

[17] Oppenheim, *op. cit. supra*, Reference 7, Volume 1, sec. 281, note 1; Meyer, *op. cit. supra*, Reference 11, page 263.

[18] Hurst, *op. cit. supra*, Reference 8, page 41; Fulton, *The Sovereignty of the Sea* (1911), page 697.

[19] Fulton, *loc. cit. supra*, Reference 18.

[20] Meyer *op. cit. supra*, Reference 11, page 263, note 5.

[21] Hurst, *op. cit. supra*, Reference 8, page 41.

[22] *Pope vs. Blanton* (D. C., Fla., 1935), 10 F. Supp. 18; *Lipscomb vs. Gialourakis* (Fla., 1931), 133 So. 104. See also *Cunningham vs. Skiriotes* (C. C. A., 5th, 1939), where the international law question is noticed but not decided. In this connection it is interesting to note that, despite the United States' adherence to the three mile limit, the congressional act admitting Louisiana to the Union fixed its boundaries at three leagues out from shore (2 Stat. 701; *Louisiana vs. Mississippi*, 202 U. S. 1, 1906) and a similar boundary for the State of Texas was fixed by the Treaty of Guadalupe Hidalgo. The Act of June 25, 1868 (15 Stat. 73), admitting Florida to representation in Congress accepted the three league limit set out in Article I of the Florida Constitution of 1868 and Alabama (3 Stat. 489) and Mississippi (3 Stat. 348) were admitted with boundaries of six leagues out from the shore. Despite the Treaty of Guadalupe Hidalgo the State of Texas, in making leases along its shore line, has in every case limited the extent of the lease to three miles from the shore on the theory that the State's jurisdiction extended no further.

[23] Hurst, *op. cit. supra*, Reference 8; Oppenheim, *op. cit. supra*, Reference 7, Volume 1, Sec. 387bb. Note 2 to this section calls attention to the fact that this is the view of the present editor which is in conflict with the view held by Oppenheim.

[24] Meyer, *op. cit. supra*, Reference 11, page 263, Reference 5.

[25] Oppenheim, *op. cit. supra*, Reference 7, Volume 1, Sec. 287bb.

[26] Gidel, *op. cit. supra*, Reference 13, Tome I, page 507.

[27] See, however, *Jacobsen vs. Norwegian Government* (Supreme Court of Norway, 1933), Annual Digest and Reports of Public International Law Cases (1933-1934), page 109, which really involves a question of municipal law.

[28] See 39 Columbia Law Review 316, 324 (1939), where the view is taken that the individual states are without authority to acquire new territory. The opposite view is taken by Loret, *op. cit. supra*, Reference 5, page 256.

Oil Looms Large In Texas Economy

Half of the people are directly interested in the industry; many populous communities have been built and are wholly dependent upon it, and any increase in the tax on oil production would be an imposition upon the prosperity of the entire state

THE year 1940 being one in which an election for governor of Texas will take place, the woods and plains are crowded with swarms of candidates pushing the jack-rabbits out of their way in their efforts to get to Austin; and the radio is made hideous with their rantings and those of their staunch supporters. It would be a pity if at least one of these great orators and moulders of public opinion did not turn up some truthful information about the direct personal interest which more than half of the population of Texas has in the oil industry of the state and in the necessity of not overburdening the state's most important industry—oil.

Residents of the oil-producing counties of Texas are just as much "in the oil business," whether they are conscious of it or not, as the Indians who formerly occupied these plains were "in the buffalo business." If the buffalo failed to show up, the Indians had to move or starve. If oil production, in these times, is impeded, whether through natural causes or through political bungling, many of the residents of Texas will have to move or starve. The natural causes operating to reduce production of oil can be adequately provided for, within limits, by the technicians of the oil industry. The political causes are in the hands of the people of the state; and if anyone thinks that the people are at the mercy of the politicians in any efforts to direct the course of public events, they need only consider what happened to the Supreme Court reform project of the President; what happened to Governor Bill Murray's "fire bells" bills in Oklahoma a few years ago; and what happened to the politically-supported racketeers in New York City at the hands of Dewey. The people of this state have the power to prevent the politicians from ham-stringing the one industry which has added more than 2,000,000 to the state's population. If they permit it to be damaged, this 2,000,000 will have to go elsewhere, and the rest will have much harder times.

The recent census has not yet been tabulated, so that the most recent general population data available are the bulletins based on the canvas of 1930. Whereas, in 1930 the total population of Texas was 5,824,715, it is probable that

PRELIMINARY figures for 1939 indicate that the average tax per barrel of Texas crude oil produced amounted to about 9½ cents. When all tax figures for the year are summed up, it will be found that Texas oil producers paid about 45 million dollars in state and local taxes on a reported production total of 478,192,887† barrels of crude oil.

Those who advocate making oil pay the increased cost of state government, on the premise that Texas oil producers are only paying now 2¾ cents per barrel, should take time out and study the facts as they are revealed by the official state and local tax records.

Here are the facts for 1939:

Nature of Tax	Tax Rate per barrel	Cents per dollar tax
Gross Production tax	$ .02940	31.01
Regulatory (R.R. Comm.)	.00188	1.98
Gross receipts tax	.00140	1.48
Ad valorem (state and local)	.05533	58.36
Car and truck licenses*	.00055	.58
Gasoline taxes*	.00065	.69
Payroll taxes (state only)	.00485	5.12
Franchise taxes	.00060	.63
Other fees and permits	.00014	.15
TOTAL	$ .09480	100.00

* On oil field cars and trucks only.
†On which Gross Production Taxes were paid.

The fact that 58 cents of the Texas oil producer's tax dollar is paid in state and local ad valorem taxes, immediately eliminates any comparison of Texas oil taxes with those of other oil-producing states. Those who point to severance tax rates of other oil states, attempting to show that Texas operators pay a low rate by comparison, only cite the Texas gross production tax and do not make it clear that severance taxes of other states are in lieu of ad valorem taxes on oil in place. Any fair comparison of all tax factors of the respective oil producing states makes it evident that Texas oil producers actually pay a higher tax rate per barrel than any other oil state.

A factor of far-reaching importance in any proposal to further increase the tax load on Texas oil is the army of Texans which depends upon this industry for a living. One million Texans get their living directly from this one industry. At least another million Texans live and work in the state because of oil. Thus, more than one-third of the state's population looks to this one industry for its immediate and future livelihood.

TABLE 1

Distribution of Daily Allowable Production and Comparative Local Populations Affected.

COUNTY	Leases	Wells	Daily Potential	Daily Allowable	Population 1930
Gregg, Rusk, Upshur, Smith	3,751	25,944	.....	685,608	123,682
Ector	332	1,811	1,756,935	83,138	3,958
Duval	408	2,945	.....	68,865	12,191
Wichita	1,198	7,533	.....	64,885	74,416
Brazoria	292	1,065	499,514	63,909	23,054
Nueces	330	1,057	.....	57,610	51,779
Harris	563	1,502	479,108	52,821	359,328
Gray	396	1,957	565,136	51,763	22,090
Pecos	269	1,212	4,200,522	49,374	7,812
*San Patricio	151	527	.....	46,175	23,836
Winkler	331	1,798	1,013,300	45,354	6,784
Refugio	110	839	.....	43,687	7,691
Hutchinson	293	1,406	407,960	37,455	14,848
Montgomery	198	933	454,068	37,043	14,588
Ward	218	1,475	875,775	35,444	4,599
Fort Bend	81	439	.....	31,289	29,718
Gaines	123	413	424,090	27,900	2,800
*Titus	114	454	.....	27,577	16,003
Chambers	122	564	225,584	26,683	5,710
Crane	123	801	680,336	24,495	2,221
Van Zandt	124	591	.....	23,857	32,315
Upton	160	929	297,714	23,657	5,968
Liberty	147	462	65,387	21,149	19,868
Caldwell	278	1,310	13,130	19,580	31,397
Webb	190	1,056	.....	19,500	42,128
*Howard	158	945	247,619	17,952	22,888
Young	586	2,354	83,591	17,687	20,128
Archer	677	3,897	27,490	17,636	9,684
Galveston	101	293	25,860	17,621	64,401
Calhoun	22	230	.....	16,363	5,385
Victoria	58	252	.....	14,743	20,048
*Marion	108	268	.....	14,367	10,371
*Cass	92	247	.....	14,086	30,030
*Franklin	57	227	93,362	13,788	8,494
Wharton	90	332	93,362	13,777	29,681
Jefferson	126	410	520,997	13,726	133,391
Jones	164	552	.....	12,882	24,233
Wilbarger	206	1,648	36,121	12,211	24,579
Carson	92	470	123,063	11,620	7,745
Wheeler	74	326	235,286	11,503	15,555
Guadalupe	87	371	.....	11,367	28,925
Jim Wells	80	188	.....	10,931	13,456
Anderson	70	171	64,107	10,519	34,643
Cooke	186	913	32,513	10,490	24,136
Jack	255	785	67,718	10,291	9,046
Total above 10,000 bbl. per day	9,838	47,958	.....	1,256,769	1,351,921
Matagorda	39	99	24,128	9,642	17,678
Henderson	53	145	64,108	9,424	30,583
Shackelford	296	1,945	.....	9,137	6,695
Yoakum	38	133	137,374	9,043	1,263
Montague	145	949	23,548	8,610	19,159
Andrews	37	186	101,771	8,536	736
Jackson	22	94	16,712	7,917	10,980
Polk	49	163	56,765	7,686	17,555
Hardin	138	669	16,650	7,659	13,936
*Glasscock	59	257	209,760	7,517	1,263
*Aransas	56	118	.....	7,064	2,219
Reagan	18	202	.....	6,631	3,028
Hockley	23	37	33,175	5,862	9,298
Zapata	65	681	.....	5,713	2,867
Hopkins	12	73	.....	5,183	29,410
Bee	77	251	.....	5,003	15,721
Orange	48	99	.....	4,929	15,149
McMullen	43	293	.....	4,709	1,351
Stephens	209	624	.....	4,447	16,560
Austin	63	201	.....	4,022	18,860
Jim Hogg	26	153	.....	3,947	4,919
Hidalgo	60	126	.....	3,812	77,004
Fisher	61	148	.....	3,676	13,563
Clay	88	649	24,219	3,588	14,545
Eastland	229	471	.....	2,829	34,156
Navarro	127	806	3,916	2,790	60,507
Starr	32	144	.....	2,614	11,409
Cochran	8	16	.....	2,278	1,963
Loving	46	94	5,861	2,217	195
Tyler	1	25	11,416	2,025	11,448
Brown	206	907	2,023	2,023	26,382
*Freestone	35	53	.....	1,897	22,589
Scurry	18	28	2,465	1,823	12,188
Houston	19	35	4,688	1,788	30,017
Limestone	58	242	1,724	1,724	39,497
Baylor	18	164	5,434	1,568	7,481
Callahan	190	1,181	1,709	1,476	12,785
Coleman	64	341	1,627	1,462	23,669
Bastrop	21	116	.....	1,112	23,888
Karnes	4	32	.....	1,103	23,316
Live Oak	10	29	.....	1,056	8,956
Total, 1,000 to 10,000 bbl. per day	2,811	12,979	.....	185,552	694,688
Ten Counties, 500 to 1,000 bbl. per day	313	1,626	.....	7,044	430,580
Ten Counties, 100 to 500 bbl./day	191	847	.....	2,890	202,122
21 Counties, less than 100 bbl./day	73	242	.....	725	610,941
Total, 41 Counties, less than 1,000 bbl./day	577	2,715	.....	10,669	1,243,643
Total, outside East Texas	13,226	63,652	.....	1,452,971	3,290,252
Total, 130 producing Counties	16,977	89,596	.....	2,138,579	3,413,934
Balance of State	....	.....	.....	.....	2,410,821
TOTAL STATE	16,977	89,596	.....	2,138,579	5,824,715

* Counties thus marked contain parts of fields which cross county lines. Rough approximations have been made with respect to these fields, as to how many properties, wells and daily allowable barrels belong in the counties concerned. Such pairs of counties are Titus and Franklin, Cass and Marion, Howard and Glasscock, Aransas and San Patricio.

it will be found to exceed 7,000,000 in the count just being completed. For past periods, however, the figures will hold, and they will be at least indicative with respect to the present, at least insofar as they will represent the degree of state representation of various counties.

In Table 1 are shown all the oil-producing counties of the state that are of sufficient importance to warrant state attention. Only a few are omitted, and as one of those shown has a daily allowable of but 3 barrels, the ones which are omitted are of small significance. For each county are shown the number of producing leases, the number of producing wells, the daily allowable as at January, 1940, and the population as at 1930. The 4 counties which embrace the East Texas field are shown as a single item. From this it appears that 3,400,000 people dwell in the 130 producing counties and only 2,400,000 in the balance of the state, computed on the 1930 basis. Of the 3,400,000 who live in the producing counties, all but 123,000 live outside the 4 counties of the East Texas field. The point of these figures is that political constituencies totaling 3,290,000 have permitted political constituencies totaling only 123,000 to so abuse the proration regulations that every community in the larger group has suffered. Even if Dallas, Tarrant and Harris counties are added to the 4 East Texas counties and Harris County excluded from the other group the disproportion is still tremendous, being then 3,000,000 to 1,000,000. This is probably the more accurate picture from a technical point of view since the East Texas field is largely controlled from Houston, Dallas, and Fort Worth. Of the 63,652 wells in the state outside the East Texas field, 47,958 are situated in 48 counties, each of which has a daily allowable in excess of 10,000 barrels per day, and the population, which includes Harris County, is 1,350,000.

What sort of operators predominate in the East Texas field? There are 971 separate concerns (see Table 2) operating leases in the East Texas field. Of these, 494, or more than half operate only one lease in the field, and 755 operate exclusively in that field and nowhere else in the state. Of this 755 operators who are active in East Texas only, 440 operate only a single lease in that field, and 282 of these leases have only 3 wells or less each. There are 216 operators in East Texas who have pro-

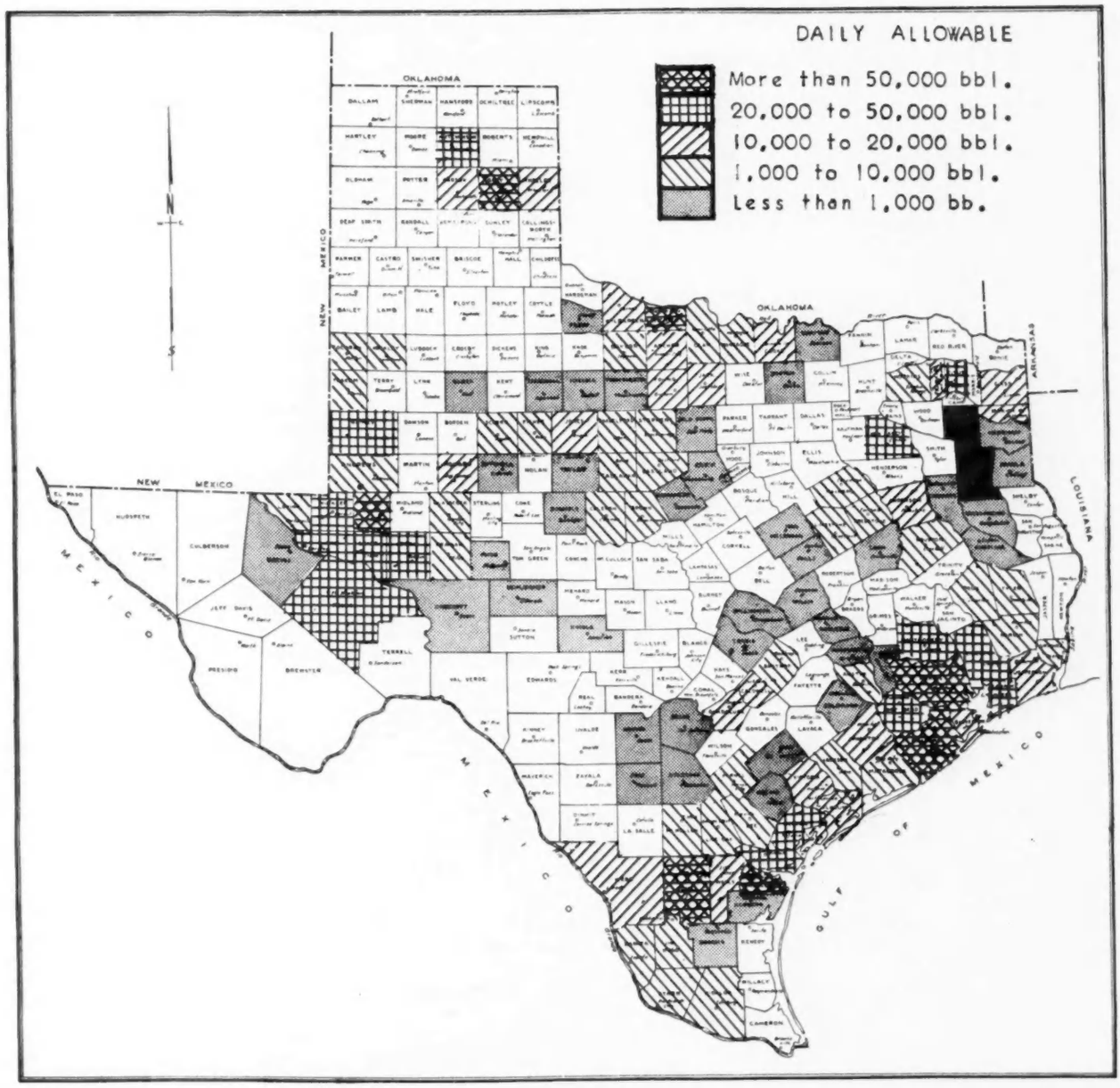

FIGURE 1
Distribution of Daily Allowable Production in Texas, January, 1940.

duction at some other point or points in the state. Of this 216, only 54 operate but 1 lease in East Texas, and only 24 of these single-lease operators have leases with less than 4 wells each. It is the small-tract operator who has caused the trouble with proration in East Texas, and the analysis shown in Table 2 clearly points out that most of these small tracts are in the hands, not of oil men interested in the development of the industry, but of promoters or "investors" with no other care or interest than to get as much as they can while the getting is good. Thus far, owing largely to the political inertia of the voters in the rest of the state, rather than to any venality of the politicians of Dallas, Tarrant, Harris and Travis counties, the getting has been very good. It is time, not only that this was changed, but that the machinery of the state was so adjusted as to prevent the recurrence of the same situation the next time a big field is brought in.

The map, Figure 1, will assist in visualizing the data set forth in Table 1. The shaded counties are those which are listed in the January, 1940, proration bulletins. The 4 East Texas counties are shown in heavy black. If ever there was a case of the tail wagging the dog, we have one here.

The statement was made above that the oil industry has added 2,000,000 to the population of Texas, and that the continued welfare of this 2,000,000 was directly affected by the condition of the oil industry. Table 3 shows the rate of growth in population in oil-producing areas as against areas in which there has been no production. All counties having less than 1,000 barrels daily allowable in January, 1940, are included with

TABLE 2

Analysis of East Texas Operations
Showing Small Tracts Preponderantly in Hands of Concerns Which Carry on No Other Operations in the State.

	Operators	Leases	Wells	Daily Allowable
Concerns Operating Exclusively in East Texas Field:				
Those operating more than one lease	315	1,368	5,335	118,054
Those with one lease and—				
1 well	127	....	.....	.....
2 wells	85	....	.....	.....
3 wells	70	....	.....	.....
Total less than 4 wells	282	282	507	.....
More than 3 wells	158	158	1,143	.....
Total one-lease operators	440	440	1,650	37,721
TOTAL	755	1,808	6,985	155,775
Concerns operating in East Texas having other production in State:				
Those operating more than one lease in East Texas	162	1,889	18,642	522,229
Those with one East Texas lease and—				
1 well	12	....	.....	.....
2 wells	8	....	.....	.....
3 wells	4	....	.....	.....
Total, less than 4 wells	24	24	40	.....
More than 3 wells	30	30	277	.....
Total, one-lease operators	54	54	317	7,604
TOTAL	216	1,943	18,959	529,833
Entire Field:				
Total concerns operating more than one East Texas lease	477	3,257	23,977	640,283
Total concerns operating only one lease in East Texas	494	494	1,967	45,325
GRAND TOTAL	971	3,751	25,944	685,608

the non-producing areas, so that any possible effect of the oil industry upon these counties is credited to other non-petrolific causes. The estimate for 1940, made necessary at this time because the recent census data have not yet been compiled, is arrived at by accredited methods, by increasing each group in the proportion which that group increased in the last interval for which beginning and closing data are available, that is, on the 1920-1930 rate of increase. The estimate for the entire state, based on the rate of growth of the non-producing counties, starting with the census of 1890, is 6,110,000 against an estimate for the figures to be revealed by the recent census of 7,430,000. As the oil counties are not confined to any particular geographical section of the state, nor to any specific area of similar climatic conditions or soil conditions, the comparisons suggested in this table may be considered to be free from any influences other than those of the oil industry. To permit of examination of the possible effect of large cities on the results, Table 3-A has been prepared covering the 6 counties including the 6 largest cities. Three of these counties are included with the oil counties in Table 3 and 3 are included in the non-producing counties. Harris, Galveston and Jefferson all contain important sea ports, and their growth has probably been more due to this fact than to the amount of oil actually produced within their boundaries. However, the oil industry has contributed very substantially to this phase of their business. This is well illustrated by Jefferson County where the growth of refining and terminal facilities at Beaumont and Port Arthur during the 1920's almost doubled the population of the county in that period.

Tables 3 and 3-A therefore support the statement that the industry has added 2,000,000 to the population of the state at least to the extent of 50 percent. The other 50 percent can be inferred by an examination of the populations in the individual oil counties, relating the sharp increases in population with the finding of first production. Table 4 gives some idea of what results might be obtained by so arranging these data that the large increases definitely known to have been caused by oil operations all fall within the same period. Only a few counties are shown, since the results of a complete study are so fantastic as to pass belief; and all that is needed to support the claims herein made for 2,000,000 is another 800,000 in addition to that developed in Table 3. The 12 counties shown had a population totaling 123,150 at the census dates preceding first production,and populations totaling 336,497 at the next succeeding census dates, an increase of 173.6 percent as against an increase of 21.9 percent for the preceding interval. Were this former rate of increase applied in line 2 of Table 3, the 1940 estimate for

TABLE 3

Population Growth in Producing and Non-Producing Counties.

	Estimate 1940	1930	1920	1910	1900	1890
No production to 1940	4,300,000	3,623,029	2,993,398	2,565,395	2,032,968	1,518,744
Producing 1940; dry 1930	970,000	657,448	618,514	560,021	486,455	364,673
Total dry in 1930	5,270,000	4,280,477	3,611,912	3,125,416	2,519,423	1,883,417
Producing in 1930	2,160,000	1,544,268	1,051,316	771,126	529,287	352,110
TOTAL STATE	7,430,000	5,824,715	4,663,228	3,896,542	3,048,710	2,235,527
Estimate without oil	6,110,000	5,050,000	4,250,000	3,680,000	2,980,000	2,235,527
Increase due to oil	1,320,000	.....	.....	.....	.....	.....

TABLE 3-A

Comparative Effect of Large Cities in Table No. 3

	1930	1920	1910	1900	1890
Included in Producing Counties:					
Harris (Houston)	359,328	186,667	115,693	63,786	37,249
Galveston (Galveston)	64,401	53,150	44,479	44,116	31,476
Jefferson (Beaumont and Port Arthur)	133,391	73,120	38,182	14,239	5,857
Total	557,120	312,937	198,354	121,141	74,582
Rate of increase from prior period	78.0%	59.2%	63.7%	62.4%	.....
Included in Non-Producing Counties:					
Bexar (San Antonio)	292,533	202,096	119,676	69,422	49,266
Dallas (Dallas)	325,691	210,551	135,748	82,726	67,042
Tarrant (Fort Worth)	197,553	152,800	108,572	52,376	41,142
Total	815,777	565,447	363,996	204,524	157,450
Rate of increase from prior period	44.2%	55.3%	77.9%	29.9%	.....

Note: that both groups behave about the same prior to 1920 when the great increase in oil development in the state began to be felt. Thereafter, the three seaport counties, which had been no better off than the inland counties before the increase in oil activity, took a strong upward trend, while the three inland counties continued to slacken their rate of growth.

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Republic Steel Corporation, Cleveland, O.

T. M. Girdler
CHAIRMAN OF THE BOARD

PRESIDENT

TABLE 4

Effect of Production in 12 of the 54 Counties Included in Line 4 of Table 3

COUNTY	First Census after Production	Last Census before Production	Next to Last Census before Production
Duval	12,191	8,251	8,964
Wichita	72,911	16,094	5,806*
Nueces	51,779	22,807	21,955
Gray	22,090	4,663	3,405
San Patricio	23,836	11,386	7,307
Winkler	6,784	81	442
Hutchinson	14,848	721	892
Howard	22,888	6,962	8,881
Young	20,128	13,379	13,657
Wheeler	15,555	7,397	5,258
Stephens	15,403	7,988	6,466*
Eastland	58,505	23,421	17,971*
Total	336,497	123,150	101,004
Rate of growth from prior period	173.6%	21.9%	.....

*Figures are from Census of 1930; all others in right-hand column are from Census of 1910

those counties which were dry in 1930 but substantial producers in 1940 would be 1,797,000 instead of the 970,000 shown in Table 3. Thus, without including nearly all of this class of counties we have already accounted for 827,000 additional, or more than enough to support the statement that 2,000,000 people in Texas live there as a result of the opportunities created by the presence of the oil industry.

Some of the candidates who are barnstorming the state have based their programs upon some form of direct attack upon the oil industry, mostly in the nature of additional taxation, but to some extent including some oppressive regulatory feature. It is apparently useless to repeat that the oil industry is already disgracefully overtaxed. That has been pointed out often enough, with but little effect upon the voters. What should have some effect in deciding them in their choice of a candidate who is not hostile to the oil industry, is a reflection upon the figures of Table 4, and especially of Table 5. This table shows data on counties including the majority of the stripper fields of the state. In these 21 counties, there are 4975 separate producing properties, with 24,261 producing wells having a present total production of 90,346 barrels, or 3.72 barrels per day each. The population of these counties, excluding the city of San Antonio, was 519,702 in 1930 and is probably only slightly in excess of that figure today. As oil-field families go, there are probably not less than 60,000 people in these counties who are directly dependent upon the continuance of this production. Many of these properties are operated by resident owners, who make bare wages from them. Many more are operated chiefly for the benefit of some aged employe, who can thus be permitted to earn a living from the ground at no cost to the owners. It is properties in this class, rather than those where production is new and big, that will be most severely hurt by the proposed taxes and other restrictions. These properties directly support about 12 percent of the population of these counties. Can the other 88 percent afford to take on their support? Ninety thousand dollars a day coming from the ground now pays the royalty owners upward of $11,000 per day. Much of this is spent locally, with local merchants. If we assume that 12,000 men are employed at an average wage of $5.00 per day, this accounts for $60,000 all of which is spent locally with the local merchants. The balance represents profits to the working interests, or materials and supplies, most of which is spent out of the areas of production, or at least not through local merchants to any great extent. The loss of $71,000 per day could not fail to be severely felt by the local merchants in these stripper areas. With that loss, if these wells are shut down, will come also, the necessity to maintain in some sort of fashion, the 60,000 individuals who now create this income.

Table 5 also brings out another interesting fact, that the increase in population which oil brings into communities tends largely to remain there, or at least to create opportunities which will attract to those communities new additions to the population to replace those who follow the active oil fields elsewhere. This is contrary to popular belief, since it is often said that oil populations are transitory. In the 21 counties shown, the population increased 27.8 percent during the period from 1910 to 1920 in which many of the counties had their first production. This increase not only held during the next period during which most of these areas entered the stripper class, but even showed a further small increase of 4.3 percent. Only one county, Eastland, showed any severe drop.

Thus the development initiated as a result of oil operations is a permanent development, increasing property values and business opportunities for everybody in the affected areas. An industry that does this for the regions in which it operates should be encouraged in every possible way, for it creates sources of revenue far beyond its own ability to equal. Oppressive taxation is only one of the means through which the demagogues seek to throttle this beneficent activity.

TABLE 5

Counties including most of the Stripper Areas in Texas

COUNTY	Leases	Wells	Daily Allowable	POPULATION 1930	1920	1910
Archer	667	3,724	11,909	9,684	5,254	6,525
Atascosa	65	404	295	15,654	12,702	10,004
Bexar	128	805	746	46,905*	36,622*	33,062*
Brown	206	907	2,023	26,382	21,682	22,935
Callahan	190	1,177	1,366	12,785	11,844	12,973
Clay	88	497	670	14,545	16,864	17,043
Coleman	64	337	1,207	23,669	18,805	22,618
Comanche	21	101	440	18,430	25,748	27,186
Cooke	186	537	2,570	24,136	25,667	26,603
Eastland	229	471	2,829	34,156	58,505	23,421
Jack	255	600	3,984	9,046	9,863	11,817
Limestone	58	242	1,724	39,497	33,283	34,621
Montague	145	805	5,095	19,159	22,200	25,123
Navarro	127	806	2,790	60,507	50,624	47,070
Palo Pinto	26	150	514	17,576	23,431	19,506
Shackelford	296	1,878	6,264	6,695	4,900	4,960
Stephens	209	619	4,206	16,500	15,403	7,980
Throckmorton	25	144	425	5,253	3,589	4,563
Wichita	1,198	6,243	18,568	74,416	72,911	16,094
Wilbarger	206	1,648	12,211	24,579	15,112	12,000
Young	586	2,166	10,510	20,128	13,379	13,657
Total	4,975	24,261	90,346	519,702	498,388	389,761
Rate of increase from prior period	.....	.....	.....	4.3%	27.8%	.....

* City of San Antonio excluded.

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INTERNATIONAL TRUCKS

Italians Process Albanian Heavy Oil to Aviation Gasoline

By E. A. BELL

WITHIN the frame of Italy's oil policy—particularly in respect of aviation fuel—Albania plays a role of paramount importance. The geological studies carried out in Albanian territory (then in Turkey) by Coquand, a Frenchman, in 1868, revealed the existence of an oil zone near Selenica, a village 11 miles northeast of Valona, south of the Vojussa River. By 1875 a French company was working on the spot and before 1914 the annual output (the oil field measured over 1606 acres) of crude oil averaged 6000 tons; most of this was exported to Marseilles, Trieste (then in Austria) and Hamburg. In 1918, after the World War, the Selenica zone was taken over by an Italian concern (Societa Italiana Delle Miniere di Selenizza). The output regressed to about 5500 tons per annum. During the war 1914-1918 the Italians had occupied the southern part of Albania and the Italian navy had been carrying out drilling (1918) near Drashovica, 6 miles east of Valona on the banks of the Sushica River. Although for political troubles this work had to be suspended the preliminary results were such as to be kept a close secret. What leaked out induced various oil groups to undertake studies in Albania and to secure oil concessions. In all, six were granted between 1920 and 1924 to the following concerns: Standard Oil Company (126,021 acres); Ruston group; Anglo-Iranian Company (a zone of 85,032 acres along the northern bank of the Vojussa, to the north of Valona [Malakastra region]); Syndicat Franco-Albanais (292,055 acres); Societa Italiana Delle Miniere di Selenizza, and two zones (116,663 and 288,736 acres) to an Italian concern behind which stood the Italian state railways. Out of this concern (Azienda Italiana Petroli d'Albania (Italian board for the Albania oils), developed in 1925, which in turn was controlled both by the Italian state railways and Azienda Generale Italiana Petroli, the Italian semi-state main concern for mineral oils. In 1934 Anglo-Iranian Company's exploratory rights passed to the A.G.I.P., viz. to the A.I.P.A. and little by little, in the way Italy, by "peaceful penetration" got a firmer stranglehold on Albania's economic life, the interests of the other non-Italian groups passed into the hands of A.I.P.A. When A.I.P.A. took over the fields of Anglo-Iranian Company, work in the Devoli region, north of Berat, east of the confluence of the Devoli River and the Osum River (whence, down to its mouth the water course is called the Semeni River) was already in an advanced stage and a pipe line was already under construction from Kucova (to the east of that confluence, in the center of the oil region) to Valona. The pipe line was completed by the Italians in 1934. It has an inner diameter of 8 inches, and 4 pumping stations, 1 at Devoli near Kucova and 3 along the line insure the steady flow of the very viscous black Albanian oil. Capacity of the line is 1000 tons a day. The line has a length of 56 miles and by way of Fieri, Roskovec and Skrofotine reaches the cost at Uji-i-Ftohet, south of Valona, ending in underground tanks, from which the oil is transferred to tankers by means of submarine pipes. These tanks are built underground and the line buried 3 feet because the oil must be prevented during the cold months from cooling, to avoid obstruction of the pipe.

Results in the Devoli region were so satisfactory that for the time being work in the other regions was temporarily suspended, all the efforts being concentrated on the Devoli zone. In February, 1939, there were about 250 productive oil wells in this zone, the oil coming from depths varying from 1640 to 2620 feet.

The oil is rich in asphalt and yields by way of pushed refining 12-18 percent gasoline, 25 percent gas oils and 50-60 residue. Its sulphur content is high (3-4 percent). Even by cracking, it is difficult to obtain 40 percent of gasoline, which moreover, would not have the high octane number required for aviation. The residue is constituted of very heavy oils and almost useless coke. On the other hand, by way of hydrogenation the yield of gasoline is about 80 percent in weight and a quality of high-octane number, suitable for aviation is obtained.

The output of crude oil in the Albanian zones, beginning from a later date, in the Devoli zone, shows the following development:

before—
1914.... 6,000 tons annual average
after—
1918.... 5,500 tons annual average
1934.... 40,000 tons annual average
1936.... 41,000 tons annual average
1937.... 93,000 tons annual average
1938....110,000 tons annual average
1939....300,000 tons.

Means for increasing the output to the extent as it has been increased early in 1939 were there before that time but the second hydrogenation works able to obtain aviation gasoline was not completed by then. It was completed at the end of 1938 and immediately put into operation. The first hydrogenation works is at Bari, on the southeastern coast, the second at Livorno (Leghorn). The choice of these two places is significant: Bari is only 115 nautical miles from Valona or the oil harbor to the south of it (which is itself well protected from attack by sea, being near the far end of Valona Bay at whose entrance is situated the fortified Saseno Island), and on the other hand is only 71 miles by rail from Taranto, Italy's main naval station in the south, as well as 69 miles by rail from Brindisi, the air and naval base at the "bottle-neck" of the Adriatic Sea. Both these places with their large air and naval forces attached to them can easily be reached from Bari, even by tank trucks. Leghorn on the Tyrrhenian Sea, is only 59 miles by rail from Spezia, Italy's main naval harbor in the north, where air and naval forces can as well be easily supplied.

Both hydrogenation works belong to the A.N.I.C. (Azienda Nazionale Idrogenazione Combustibili, viz. Na-

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tional Fuel Hydrogenation Board), a concern founded with state assistance by the A.I.P.A. and A.G.I.P. in collaboration with the Montecatini group, Italy's most powerful chemical concern; these three groups subscribed half the initial capital (the total being 500 million lire in 1936), while the balance was taken by the state; in April last the capital was increased to 750 million lire, the whole difference being taken by the state, the increase being in connection with extensions to the existing plants.

Both works absorb the whole Albanian output of crude oil and each of them has the following production capacity per annum: 120,000 tons of super aviation gasoline (100 octane) and 30,000 tons of high class lubricants. Apart from this, the Albanian oil yields, by the hydrogenation process, a great number of high class by-products, including paraffin (7000 tons per annum for each plant), butane, propane and iso-octane. The latter is utilized for increasing the octane index of ordinary gasoline. Each works obtains 3000 tons of sulphur out of the Albanian oil. Before erecting these works, a pilot plant had been set up at the Novara works of the Montecatini concern (on the railway between Milan and Turin). Apart from using Albanian oil as a primary product, the works are also equipped for the hydrogenation of lignite (of which extensive deposits exist in central Italy), or of bituminous schists, or asphalt; this latter being mainly found in Sicily.

The above mentioned extensions to these hydrogenation works are in connection with the increased activity of A.I.P.A. and of the A.G.I.P. in Albania, with a view to pushing the Albanian output to a higher level. For this purpose, A.G.I.P. was granted a state subsidy of 40 million lire in April last and the A.G.I.P. got 125 million lire at the same time.

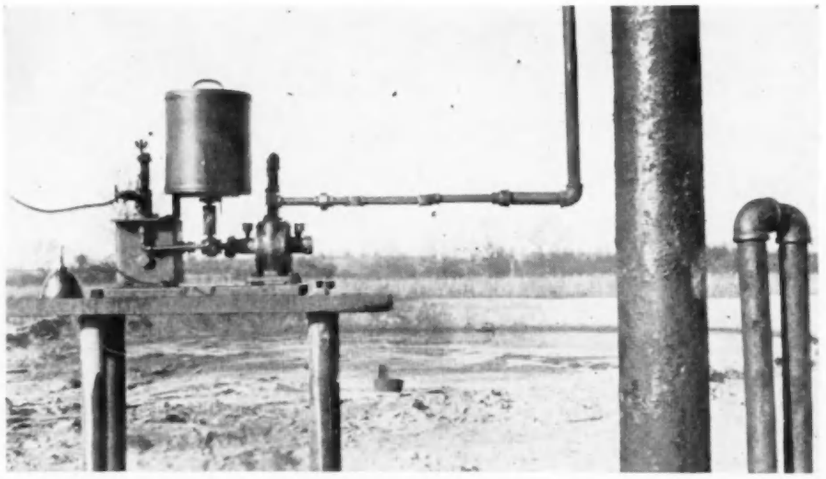
While these two works are the most modern and extensive of their kind in Italy and as such the most important sources of home-made aviation gasoline and high-class lubricants, etc., there exist about 18 more oil works and refineries, although of smaller dimensions, which are all contributing to the production of aviation fuel. For lack of space only the most important ones will be mentioned here. At Spezia the refinery of the Societa per l'Industria Italiana del Petrolio (I.N.P.E.T.), a concern belonging to the Royal Dutch-Shell group has a Dubbs cracking plant. At Naples, the refinery originally of the B.E.N.I.T. concern (1931), was taken over by the Socony-Vacuum Oil Company; the capacity of this plant is 200,000 tons of crude oil throughout per year. The cracking equipment comprises 2 Dubbs units. At Porto Marghera, close to the southern side of the continental end of the railway bridge to Venice is the D.I.C.S.A. refinery (later taken over by the A.G.I.P.) comprising 2 Dubbs cracking units with annual capacity of 500,000 tons of crude oil. At Zaule east of Trieste, the Aquila refinery has an annual capacity of 300,000 tons of crude oil. At Trieste is the refinery belonging to the S.I.A.P. (Societa Italo-Americana rel Petrolio) of Standard Oil Company concern, and finally there is the R.O.M.S.A. (Raffineria Oli Minerali, Societa Anonima) near the shore on the western outskirts of Fiume, using the Holmes-Manley cracking method). R.O.M.S.A. belongs to A.G.I.P.

All these works use as basic material either imported crude oil or imported residue. Thanks to the consistent policy of increasing the refining activity at home (to the detriment of the importation of finished products, thus alleviating her balance of trade to a considerable extent) which Italy has been observing since 1926, the share of crude oil in her oil imports has increased steadily and the following table shows interesting particulars in this respect.

Imports of Crude Oil (Tons)

Year	Total imports	Crude	Percentage of crude
1926	834,150	31,332	3.2
1928	1,019,390	50,482	4.9
1930	1,499,323	96,439	6.5
1932	1,498,472	127,165	8.5
1934	1,828,413	142,948	7.75
1938	2,600,000	1,600,000	61.5

The home output of crude oil is insignificant. There are oil wells in the provinces of Parma, Piacenza, Pavia in Northern Italy and also in Frosinone province (San Giovanni Incarico between Rome and Naples), but the combined output is declining: 26,526 tons in 1933, 19,942 tons in 1934, 14,266 tons in 1937, 13,000 tons in 1938. The main imports of crude oil and residue came from Rumania (where A.G.I.P. has an interest in the Prahova Oil Company, whose daily output is 73 wagons). Iraq (where A. G. I. P. has a participation in the British Oil Development Company), Iran, U.S.S.R. and U.S.A. were among the other chief supply countries for Italy, from which she is now cut off. Only limited land transport from Rumania and from the U.S.S.R. is open to her as far as oil supplies are concerned, while the main works for processing the basic materials imported placed as they are chiefly on the sea shore, should prove vulnerable to attack from the sea or from the air.



Oil is being chemically treated in the flow line by an economical and efficient arrangement in the East Tuskegee field of Southern Creek County, Oklahoma.

The chemical container, motor and pressure lubricator are mounted on an elevated platform. Gas from the well is piped from the gas drip to drive a small motor. The motor drives the pressure lubricator on the lower left of the elevated platform. Chemical is fed by gravity flow from the container into the lubricator and is then forced into the lead line by pressure supplied by the lubricator.

The use of a force pump to introduce chemical into an oil line through a lubricator results in a constant pressure and the operations cannot be affected by changes in temperature or the clogging of a needle valve. Each stroke of the piston forces the chemical into the oil line and by varying this stroke, the volume may be controlled.

The glass gauge directly below the chemical container visually shows the flow of chemical into the lubricator.

DRILLING CONTRACTORS' NOTEBOOK

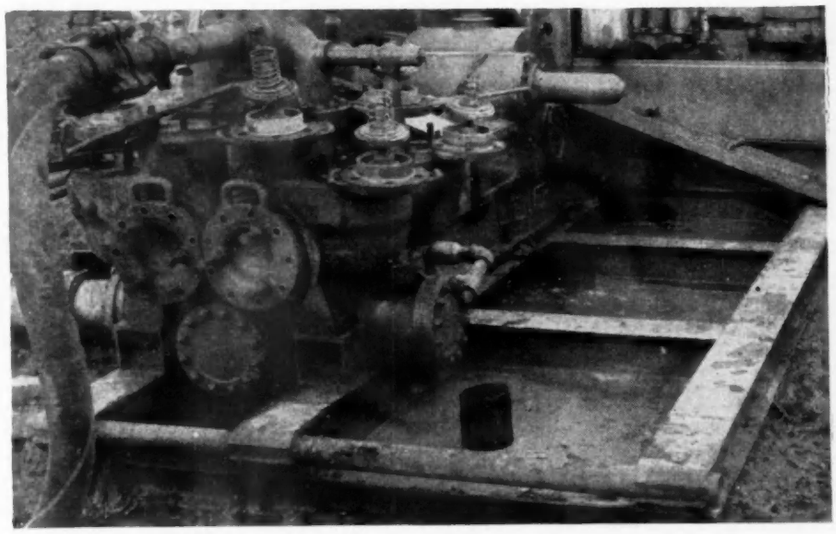
Helpful Suggestions For Those Interested In Drilling Methods

Operating Ideas Maintenance Hints New Rig Hook-ups

Published as a regular feature of THE OIL WEEKLY

1. RIGGING UP

Sheet Steel Base Aids in Locating and Transporting Heavy Equipment



Sheet steel plates welded to the skid base simplify placement of equipment.

A CONTRACTOR operating in Western Kansas saves considerable time on installation of mud pumps, engine mountings and other heavy equipment by welding a sheet of ¼-inch steel plate over the entire bottom of the skids or steel supports. The plate permits the equipment to be placed anywhere regardless of mud conditions, providing the ground is level.

No supports, bases or other type of mounting were necessary for a mud pump and engine unit fixed in that manner. Small vibrations tended to work the entire base down to a firmer bottom instead of, as in the timber of block type of mounting, causing one corner to sink and place undue strain on some part of the connecting equipment.

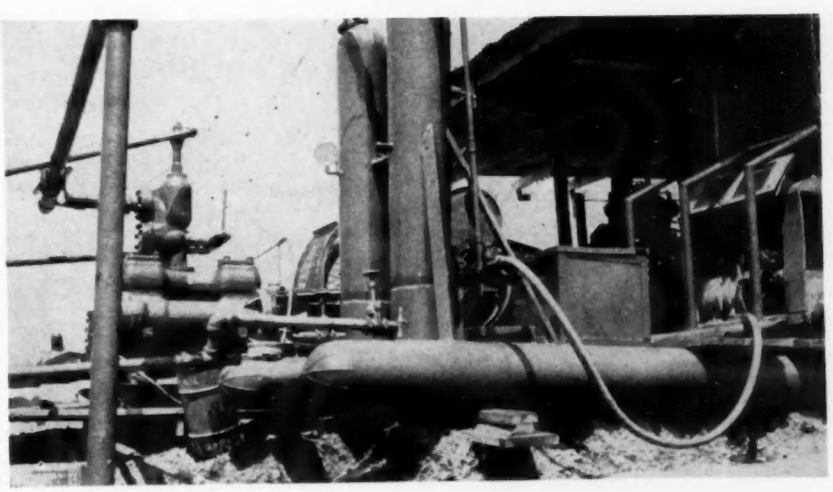
The steel plate adds very little weight to the equipment, and provides an additional time saving by making timbers and blocking unnecessary. Miscellaneous fittings can be carried in the unused sections of the steel-bottom base when the mounting is carried on the trucks or skidded between locations.

2. RIGGING UP

Gas Scrubber and Volume Tank Unitized

A COMBINATION gas scrubber and volume tank to condition fuel for internal combustion engines is used at rigs of Noble Drilling Company.

Two horizontal vessels are made of 10-foot joints of 12-inch pipe with orange-peel welded heads on each end. Two vertical tanks connected to the horizontal ones with pipes. The gas, under field pressure, enters the first vertical tank for scrubbing, and then passes through a reducing regulator for pressure required for the fuel mixers on the engines. The horizontal drums are connected together, and to the vertical tank, which is equipped with the pressure-reduc-



This combination scrubber and volume tank to condition fuel for internal combustion engines simplifies rigging-up operations at Noble Drilling Company rigs.

ing regulator. The scrubber and regulators are built as a unit to facilitate moving the equipment. It is easily connected with flanged couplings when ready to begin operations.

3. PIPING

Steam and Water Lines Unitized

UNITIZATION of steam and water lines from boilers to rig floor lessens time required to tear down and rig up, simplifies handling, and results in longer line life. This unitization may be obtained by leading 2½-inch water lines through brackets welded to either side of the 5-inch steam line. All connections are made with hammer-on unions, which can be made up or broken out with a few sledge blows. Eyes welded atop the steam line at the middle of each section facilitate handling by winch line. A layer of asphaltic rough-surfaced roofing paper nailed to the board walk, parallel to the lines, does not become slippery with spilled oil and insures a safer footing for workers.

Unitized steam and water lines save time when rigging up and tearing down.

This fuel tank has a skid-type frame for convenient placement on a truck or at rig.

4. FUEL SUPPLY

Skid Base for Tank Aids Handling

A FUEL tank for Diesel engines which may be used attached to the bed of a truck, mounted on a superstructure, or set on cribbing on the ground, is used in the Nocona field, North Texas. The base is skid-type, for ease in handlnig with a winch, and is attached to the tank with saddles and straps around the body. The tank may be set on the mound of earth formed when excavating the mud pits, eliminating a super-structure.

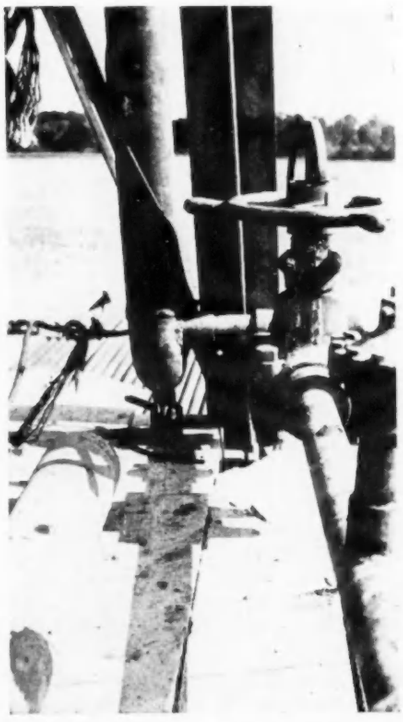
5. RIGGING UP

Support Plate Curbs Strain on Fittings

DERRICK vibration, communicated to the standpipe rigidly fastened in one corner of the structure, can impose severe strain on fittings in the mud line unless provision is made to permit the pipe to shift under load without binding the fittings.

By mounting the standpipe on a formed shoe of heavy plate, of sufficient area to distribute the weight on an adequate area of wood flooring, the shoe can travel slightly across the planking to find a point of support neutralizing pipe thrust. If the shoe be flexibly attached to the standpipe, further motion of pipe is permitted without being cramped or restrained by floor support.

Paired lugs welded to the plate, matching with and loosely confining a similar projection on the bullplug forming the base of the standpipe, are drilled to take a ⅞-inch bolt with play enough to permit a slight rocking motion without binding.



Support plate, with dovetailing ears matching with another on the base of the standpipe bullplug, gives flexibility to absorb derrick vibration.

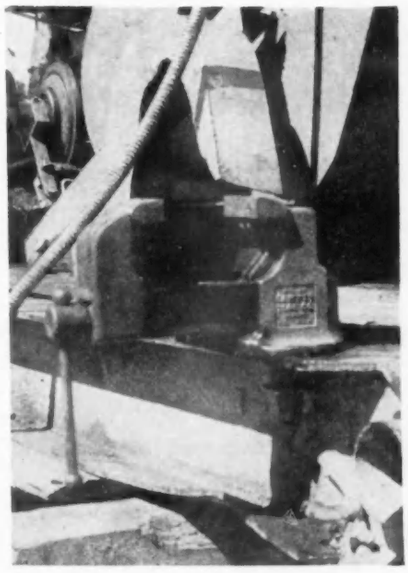
Triangular baffles in mud pit change the course of the mud flow and facilitate precipitation of sand and heavy particles that might pass through shale screen.

6. MUD HANDLING

Flow Diverted by Angular Baffles

TO slightly divert the flow of drilling mud from one compartment to another so that finely divided shales and sand will precipitate over a wider area, Fain Drilling Company constructs baffles in the form of a right triangle.

The baffles are set in the pit at convenient distances from each other with the angle side facing the stream of mud, on one side of the pit, and the straight side on the other. The mud flowing from the shale screen to the settling sections strikes the angle and is diverted across the pit to the other side. This action aids in settling abrasives from the mud.



This vise finds a sturdy support on the I-beam of the drawworks foundation.

7. TOOL USE

I-Beam Is Support for Vise

WHEN the engines and drawworks are set on an I-beam foundation, a general-purpose vise can be attached with little trouble, and as easily removed. A hole bored or burned at the most convenient point is provided for the mounting bolt.

Pipe can be threaded or cut and other work can be done on a vise so mounted without danger of tipping.

8. WATER SUPPLY

Shield Protects Can and Paper Cups

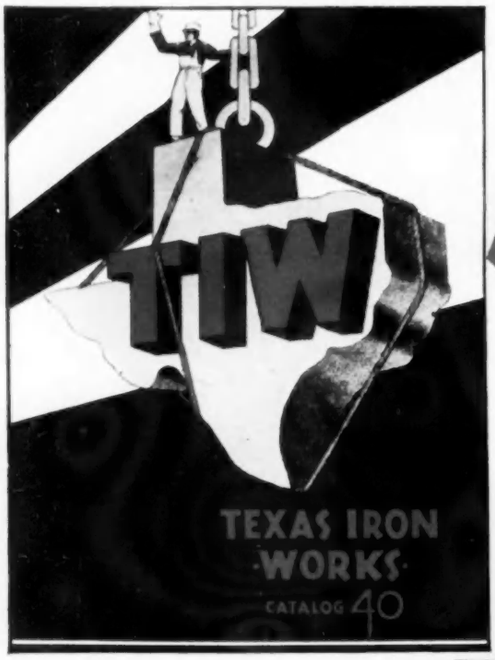
TO the field foreman or superintendent, the drinking water supply very often is a constant source of trouble—the can becomes hopelessly battered from rough treatment, the cover bounces off on a rough road and is lost, paper cups are misplaced or the container breaks, strewing the cups among the tools, and the used cups, hastily tossed aside, are scattered by the wind over a wide area around the lease.

One foreman found the solution to all of these aggravating problems in a simple framework for the water can. A flat piece of 3/16-inch or ¼-inch steel plate, several inches wider all around than the base of the water can, served as a base to which two 2-inch flat steel uprights were welded. A circular 4-inch band of light steel was welded to these uprights, and the ends turned back to form lips so that a bolt could be used to tighten the band firmly to the can. The paper cup container-dispenser was tack-welded to this band, as well as two convenient handles made of sucker-rod material.

To permanently and quickly dispose of the used cups, a piece of welding wire shaped like a large safety-pin was hung at a convenient place on the can. The cups were impaled on the pin end, to be disposed of when convenient. To keep the cover on tightly, a light chain with a spring and hook on each end was passed through the cover handle and hooked to each side of the can.

The framework will not shift around nor tip over in the rear of the truck while traveling over rough roads. When set out of the truck, it remains as a completely equipped unit. The saving in supplies and replacements within a single season repays the cost of building it.

This assembly protects the water can.



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HIGHLIGHTS IN THE WEEK'S NEWS

Washington

Government Moving to Acquire Aviation Gasoline

Specification for the 100-octane gasoline required by the government for military planes have already been distributed to various units of the industry and "rapid progress" is being made to assure adequate supplies properly stored to meet all demands, it was disclosed last week by the National Defense Advisory Commission.

In a "progress report" of the work of the commission over the past six weeks, Edward R. Stettinius, Jr., member in charge of the materials division, expressed confidence that needs of the government for adequate supplies of critical and strategic materials will be met by the defense industries.

Other than with respect to 100-octane gasoline, there was no indication that supplies of petroleum products offered any difficulty. A survey of the situation by Dr. Robert E. Wilson, oil adviser to the commission, had previously shown that needs for most oil products could be filled by the industry with little additional effort.

"Actual acquisition of strategic and critical materials is proceeding at a most encouraging rate," Stettinius said.

Stanley W. Duhig, vice president and treasurer of Shell Union Oil Corporation, New York, has evinced his willingness to serve without pay as one of 10 industry advisers to Leon Henderson, commission member in charge of industrial price stabilization problems.

The work of the group, it was explained by Henderson, will be to advise on problems related to prices as they are affected by taxation, cost requirements, amortization and depreciation policies as well as methods of financing increased plant and facility purchases.

Following the suggestion of Wilson that the oil industry could aid in the production of explosives and synthetic rubbers with a petroleum base, Stettinius announced on July 18 that action is being taken to stimulate increases in the production of toluol from petroleum. Toluol is essential to the production of TNT.

The matter was taken up at a meeting of the coal tar production subcommittee of the chemical advisory committee of the Army and Navy Munitions Board and the petroleum section of the defense commission, he said.

Stettinius disclosed that it was decided to designate a central office to receive proposals for the manufacture of nitratable grade toluene from responsible companies which may be considering entering this field. Such proposals will be entertained if the prospective contractor is prepared for production of large quantities of the product within twelve months of the contract date.

The commission official said that companies interested in the matter should get in touch with Major J. B. Harris, of the ordinance department, United States Army, at 1466 Nemours Building, Wilmington, Delaware.

The advisory commission this week also turned its attention to the problems of transportation, and is making survey of those involving the inland waterways and pipe lines, it was disclosed in a progress report by Ralph Budd of the transportation division.

Rule Oil Operators Not Under Natural Gas Act

Oil and gas well operators were held last week by the Federal Power Commission not to come under the Natural Gas Act which, the commission ruled, is designed to control the natural gas industry, starting with the pipe line through which the gas is transported.

The commission's decision, important to oil and gas well operators with whom the production and gathering of gas is the only activity which would subject them to its control, was made public July 17 in ruling on the appeal of the Columbian Fuel Corporation.

"It was not the intention of Congress to subject to regulation under the Natural Gas Act all persons whose only sales of natural gas in interstate-commerce, as in this case, are made as an incident to and immediately upon completion of such person's production and gathering of said natural gas and who are not otherwise subject to the jurisdiction of this commission," it was held.

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Allowables

World Market Offsets Marked Gain in Domestic Demand

Sharply contracted world markets are tending to offset increased gasoline consumption in the United States, the United States Bureau of Mines warned July 18 in a forecast placing the crude petroleum production necessary to meet demand in August at 3,657,700 barrels per day.

While the August figure is 29,300 barrels higher than the estimate for the current month, it was pointed out, it is only 15,400 barrels above the actual demand in August, 1939.

The bureau found that daily average crude production during the five weeks from June 1 to July 6 was 3,744,000 barrels, and runs to stills 3,622,000 barrels, while in that period domestic crude stocks decreased an average of 18,000 barrels a day, indicating a demand of 3,762,000 barrels compared with the bureau's estimate of 3,620,000 barrels for June.

Although the high runs were reflected in a desirable build-up of distillate fuel oil stocks amounting to about 4,000,000 barrels in June, it was stated, the reduction in gasoline stocks was about 750,000 barrels less than had been estimated by the bureau.

"The European war," the report commented, "has closed additional markets to exports of crude petroleum and refined products. The net effect of this decline in exports is to offset increases in the domestic market and to indicate a demand for domestic crude in August that is only slightly higher than for the same month last year.

"Liquidation of large stocks of gasoline accumulated during the winter months is proceeding slowly due to high runs to supply the relatively greater demand for light fuel oils and to build up depleted stocks of these oils.

"The general trend in domestic motor fuel consumption for the third quarter indicates an increase of at least 6.5 percent over last year. The percentage increase of refinery sales by months, however, may be very irregular. Anticipation of the increase in the Federal gasoline tax may inflate the volume of sales in June and reduce them correspondingly in July. The trend of refinery operations indicates the continuance of relatively low gasoline yields and higher distillate yields until a better balance between stocks and demand is attained."

Effect of Gasoline Tax Boost

As a result of the increase in the gasoline tax, which probably influenced large purchases in June which will be followed by reduced sales in July and, possibly, the early part of August, the bureau pointed out that motor-fuel demand probably will not be comparable with actual consumption for the individual months this summer. The increase for August, it said, is estimated at only about 4½ percent over the

abnormally high demand of August, 1939, or 56,200,000 barrels.

Forecasts by principal exporters point to continued low shipments of motor fuel to foreign countries, and the August estimate is 1,900,000 barrels, or 100,000 barrels under the July forecast, and 2,308,000 barrels less than actual shipments in August of last year.

American Petroleum Institute statistics indicate a decrease of 5,470,000 barrels in stocks of finished and unfinished gasoline in June, which would bring them from 100,859,000 barrels on May 31 to approximately 95,400,000 barrels on June 30, and the bureau estimates a further reduction of 6,400,000 barrels during the coming month. Benzol and direct sales of natural gasoline are estimated at 1,200,000 barrels.

On the basis of these figures, the expected refinery production of gasoline in August will be 50,500 barrels, which the bureau distributed among the several districts as follows:

East Coast, 6,690,000 barrels; Appalachian, 1,870,000 barrels; Indiana-Illinois, 10,640,000 barrels; Oklahoma, 2,920,000 barrels; Kansas, 2,770,000 barrels; Texas inland, 3,610,000 barrels; Texas Gulf Coast, 11,960,000 barrels; Louisiana Gulf Coast, 1,460,000 barrels; Inland Louisiana-Arkansas, 880,000 barrels; Rocky Mountain, 1,380,000 barrels, and California, 6,320,000 barrels.

Natural gasoline to be blended at refineries is estimated by the bureau as 6.2 percent of the total refinery gasoline production or 3,130,000 barrels, and the yield of straight-run and cracked gasoline, in order to provide for the demand for other oils, is estimated at 42.8 percent. The application of this yield to the production of 47,370,000 barrels of gasoline gives crude runs of 110,690,000 barrels, or 3,570,600 barrels daily. Foreign crude runs are estimated at 3,300,000 barrels.

As in the case of motor fuel, exports of crude oil are expected by the principal shippers to continued curtailment, and the bureau estimates August shipments at 3,700,000 barrels, the same as estimated for July but 2,269,000 barrels less than the actual movement a year ago. The estimate for crude to be used for fuel and losses is 2,300,000 barrels.

The total demand for domestic crude, as indicated by the estimates, is 113,390,000 barrels for August, or 3,657,700 barrels a day, which the bureau allocates among the producing states as shown in the accompanying table.

Bureau Forecast of Crude Oil Demand in August

State	Forecast August 1940	Forecast July 1940
Texas	1,326,400	1,339,400
California	598,400	593,900
Illinois	440,600	402,300
Oklahoma	402,600	403,900
Louisiana	276,100	278,100
Kansas	166,800	159,400
New Mexico	105,200	106,100
Wyoming	81,300	80,600
Arkansas	65,200	67,400
Michigan	57,100	61,600
Pennsylvania	48,000	47,900
Montana	20,600	18,100
New York	14,000	14,000
Kentucky	13,900	14,200
Mississippi	10,300	9,700
Indiana	10,000	9,000
West Virginia	9,000	10,000
Ohio	8,000	8,000
Colorado	4,200	4,800
	3,657,700	3,628,400

St. Clair Heads California Group Under Revised Set-Up

L. P. St. Clair, president of the Independent Oil Producers Agency, has been chosen as administrator for the Conservation Committee, of California Oil Producers, a position corresponding to that of oil umpire, from which post Lawrence Vander Leck recently resigned. Conservation Committee of California Oil Producers is the name adopted by the former Central Committee of California Oil Producers, industry-chosen proration authority in California.

St. Clair was chosen for the post by a committee of seven appointed by the Central Commitee at its June meeting, at which time Vander Leck resigned as oil umpire and as chairman of the Central Committee. A. H. Bell, Continental Oil Company, was elected chairman of the committee.

A new policy for the post of Administrator was decided upon by the committee. As administrator, St. Clair's first responsibility will be to secure compliance with the production allotments assigned by the Conservation Committee; but of equal importance, he will devote much of his time to securing markets for California crude in an effort to obtain a fair outlet for all producers.

St. Clair, who has been in retirement for a year following his resignation as board chairman of Union Oil Company of California, accepted the post on condition that he serve without compensation, explaining he was willing to assist the industry where it was felt that he could, but that such assistance must be voluntary.

Selection of St. Clair as administrator brings to that post one of the ablest executives in the petroleum industry and one who has been active in curtailment matters since 1923, or long before the concerted industry-wide efforts at conservation of petroleum output. In his earlier efforts, he sought a solution to the problem of over-production in the Los Angeles basin, and in 1929 was instrumental in formation of the first state-wide commitee of oil men, known as the General Committee, which sought a way out of the California excess crude production problem which then prevailed. This work has been carried on continuously since that date under various committees.

L. P. ST. CLAIR
Administrator of California Conservation Committee

Wardner is Assistant Administrator

W. R. Wardner, Jr., who has served for the past several years as assistant oil umpire, was named assistant administrator and office manager. Wardner has been a member of the oil umpire's staff since formation of that organization in 1929. As office manager, he will be responsible to the committee and the administrator for activities of the working organization.

In presenting the report of the selection committee, Chairman W. H. Geis stated that a number of names had been considered by the committee and that the industry had been canvassed thoroughly to find a candidate acceptable to all interests.

A vacancy created on the allocation subcommittee by election of Bell as chairman of the main committee was filled by election of Lloyd Williamson, California Star Oil Company.

Supreme Court Enters Stay In Rowan & Nichols Case

The United States Supreme Court has advised the Texas Attorney General that it has entered an indefinite stay order in the second Rowan & Nichols Oil Company case. This is a stay of execution on the injunction granted the company in its second suit attacking an East Texas proration order.

Kansas Geological Field Trip to Start August 26

The Kansas Geological Society has announced its fourteenth annual field conference for August 26 to September 1 in the Black Hills of South Dakota, and the Hartville Uplift, Laramie Mountains and Medicine Bow Range of Wyoming. It will be held with the cooperation of the University of Wyoming and the Nebraska Geological Survey.

Interest in the oil and gas possibilities of the Great Plains of Kansas, Nebraska, and North and South Dakota prompted the conference. An attempt will be made to correlate the outcropping beds with the subsurface units encountered in drilling on the Great Plains, and Permo-Pennsylvanian and pre-Pennsylvanian beds will be studied in greatest detail. Outcrops ranging from pre-Cambrian to Tertiary will be visited and studied, and sufficient time will be allowed at each stop for sampling.

Dr. S. H. Knight, Wyoming state geologist and head of the Department of Geology at the University of Wyoming, is director of the conference. He will be assisted by H. D. Thomas, University of Wyoming; G. E. Condra, Nebraska state geologist; E. C. Reed, Nebraska assistant state geologist; E. P. Rothrock, South Dakota state geologist; and J. J. Runner and A. K. Miller, both of the University of Iowa.

MEN IN THE INDUSTRY'S NEWS

LESTER M. GOLDSMITH, chief engineer of The Atlantic Refining Company, has been appointed a member of the executive committee of the power division, American Society of Mechanical Engineers. He has also been appointed a member of the American Institute of Electrical Engineers' convention committee which will be responsible for arrangements for the next annual convention of the institute, to be held in Philadelphia, January 27-31, 1941.

FRANK G. EVANS, geologist with Shell Oil Company, presented a paper last week on "Reconnaissance Photogeologic Study of a Part of the Texas Gulf Coast" before the South Texas Geological Society meeting in Corpus Christi. The next meeting of the group will be held in San Antonio.

W. R. EWERT, with The Pure Oil Company in southern Illinois, has been transferred to Tulsa to replace J. Z. Hogan, of the production department, who has been transferred to the Cumberland area, Southern Oklahoma.

WILLIAM ROSS, Stanolind Crude Oil Purchasing Company, Great Bend, Kansas, is taking over the duties of M. L. McGee, district scout, while the latter is on vacation.

T. A. MILLER, scout for the Pure Oil Company in South Texas, with headquarters at McAllen, is spending two weeks in a reserve officers' training camp at Camp Bullis.

TOM B. ROMINE, geologist for Sinclair Prairie Oil Company, returned to Fort Worth headquarters last week after a vacation trip through the Pacific Northwest.

I. W. ALCORN, Gulf Coast division engineer for The Pure Oil Company, last week won the annual horseshoe pitching contest of the Houston Technical Club for the third consecutive year.

O. J. MASTERSON, assistant chief accountant for Shell Company, is transferring to Houston where he will be chief accountant for Shell Pipe Line Company.

GILBERTO DELGADO, native of Colombia, South America, and a University of Oklahoma graduate petroleum engineer, is a trainee with The Carter Oil Company at Fairfax, Oklahoma.

JOHN BELCHER, The Carter Oil Company, is en route to Venezuela where he will enter the employ of Standard Oil Company of Venezuela.

PHILLIP HILL, Warren Petroleum Corporation, is leaving the Tulsa office to serve as utility man for the company at Salem, Illinois.

J. L. LATIMER, vice president and manager of the Magnolia Pipe Line Company with headquarters at Dallas, accompanied by his family, is vacationing in the East, and will include a visit to his boyhood home at Olean, New York.

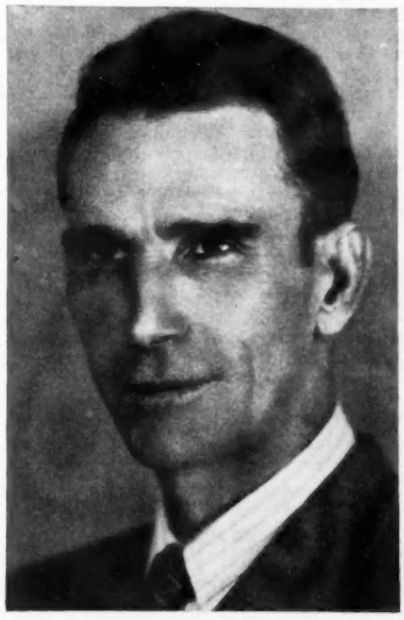
W. K. WARREN, president of Warren Petroleum Corporation, Tulsa, is in California on combined business and pleasure.

H. F. SMILEY has opened offices at 624 Hamilton Building, Wichita, Kansas, for consulting practice in petroleum geology.

JOHN H. LANGSTON, chief scout for the Sun Oil Company, Dallas, is vacationing with his family in Southwest Texas.

DAN CAMERON, scout for The Carter Oil Company, has been temporarily transferred to Jackson, Mississippi.

WILLARD GILL, geologist for The Pure Oil Company in Illinois, is transferring to Oklahoma's Cumberland district.



H. E. LINAM

general manager of Standard Oil Company of Venezuela and Lago Petroleum Corporation, entered the oil industry 23 years ago as pumper and roustabout at Caddo Lake, Louisiana. He worked for various companies and drilling contractors in Texas, Louisiana, Arkansas and Mississippi, becoming a driller in 1919. In 1922, Linam was placed in charge of field operations for Great American Oil Company, continuing with the company until it dissolved in 1925. He joined Standard Oil Company of Venezuela as a driller in Western Venezuela in May, 1925, advancing through positions of toolpusher, field superintendent, district superintendent, division superintendent to acting manager in March, 1932. He was made manager five months later, and in February, 1937, operations of Lago Petroleum Corporation were also placed under his direction.

COXEY EVANS, Seminole district chairman for Cities Service Oil Company; M. A. Wright, division engineer for The Carter Oil Company, and Joe Chastain, Baker Oil Tools, Inc., addressed the Seminole chapter of the American Petroleum Institute last week.

FRED BROWNING, Fort Worth oil producer and sportsman, had more at stake than a fight fan's interest in witnessing the Jenkins-Armstrong bout in New York last week. He is part owner of Lew Jenkins.

HAROLD BROWN, production department of Phillips Petroleum Company, has been transferred from Oklahoma City to Bartlesville as secretary to Don Knowlton, production manager.

LEO J. McGIVERN, gauger for Oklahoma Pipe Line Company, Graham district, South Oklahoma, has been awarded a 30-year service button.

R. G. MOSS, geologist for Phillips Petroleum Company, has been transferred from Evansville, Indiana, to Bartlesville.

LEAVITT CORNING, JR., geologist and magnetometer operator, is returning to Oklahoma after a short stay in San Antonio.

FRANK BROOKS, Gulf Refining Company, Indianapolis, has been vacationing in the Mid-Continent.

DON TAYLOR, production department of the Ohio Oil Company in the Lance Creek field, Wyoming, is in Tulsa.

ARTHUR J. MURPHY, treasurer of Warren Petroleum Corporation, Tulsa, is vacationing in Canada.

PAUL HINYARD, chief scout for Shell Oil Company at San Antonio, was in Corpus Christi last week to make check meet for Bob Roberts, who is on vacation.

DIED:

RAY STREIGHT, district superintendent for W. I. Southern, Inc., Russell, Kansas, died July 12 of a heart ailment. Streight, a native of West Virginia, had been with the firm since 1937, and prior to that time was connected with other firms engaged in oil production.

J. A. CHEVALIER, consulting geologist at Muskogee, Oklahoma, died July 15. Prior to opening his consulting office, he was with Peters Petroleum Company, and before that he was chief geologist for The Carter Oil Company.

RICHARD P. SIMMONS, 52, New York, died July 12 of a cerebral hemorrhage. Simmons was known in petroleum circles for his numerous oil equipment inventions, particularly in connection with seismograph instruments.

Production and Stocks Continue Down Trend

United States crude oil production fell below demand estimates for the third straight week in the 7 days ended July 20. Details are given in a table on page 40.

According to the American Petroleum Institute, crude production for the week ended July 13 averaged 3,560,000 barrels daily, or 41,650 barrels below the previous week's rate and 67,650 barrels daily below the Bureau of Mines estimate of market demand. The production was within 9/10 of 1 percent of production for the same period last year. Before July curtailment in Texas, crude production had risen to 11.2 percent in excess of the 1939 curve in the week of June 29.

Crude runs to stills dropped slightly for the third consecutive week, in reflection of decreased crude production. Runs rose to an all-time peak June 22 and have since gradually declined to a daily average of 3,565,000 barrels for the week of July 13. This represented a 10,000-barrel drop from the previous week and runs were 3.4 percent in excess of those for 1939.

Gasoline Situation

Gasoline production again declined in reflection of smaller runs to stills having amounted to 11,368,000 barrels for the week, or 101,000 barrels less than in the previous week and 28,000 barrels less than in the corresponding week a year ago.

Stocks of unfinished and finished gasoline in storage dropped still further, as domestic demand continued good. Stocks now amount to 92,372,000 barrels, the lowest since early February of this year, although last week's drop was only 903,000 barrels, less than half of the withdrawal in the previous week. Stocks now are 16.5 percent in excess of those for last year, after rising to a point over 20 percent in excess of those for 1939.

Fuel Oil Stocks

Light fuel oil stocks continued their seasonal build-up to 36,221,000 barrels for the week ending July 13, a 1,491,000-barrel increase that placed the inventories 8.7 percent higher than a year previously.

Stocks of residual fuel oil continued to fluctuate having increased 367,000 barrels to a total of 105,710,000 barrels, at which level they were, however, 7.1 percent smaller than a year before. Recent increases in stocks evidently represent increased refinery output of this product, as industrial demand has remained good. Sufficient storage of residual oils is an extremely important factor in the national picture, as these oils constitute the principal type of industrial fuel used for national defense industry in the East.

Crude oil stocks declined for the week ending July 6, in reflection of the decrease in production in that period. The Bureau of Mines reported stocks of 261,632,000 barrels, a decrease of 427,000 barrels from a week previously and 2.7 percent less than stocks held a year ago.

North Texas Crude Price Cut Causes Concern

Following the reductions in crude price postings last week in several districts of Texas and Oklahoma, hope prevailed that the marking-down would not spread throughout the Mid-Continent, although the cuts were recognized as danger signals that the industry and the state conservation officials should heed.

On the one hand, it was pointed out that no great depressing of the markets had occurred suddenly to force an overnight, unheralded slashing of crude postings, and that there would not likely be a general break in the price structure unless more evidence of market weakness accumulated, in the form of under-market selling of crude and languishing demand for products.

It was conceded, on the other hand, that crude price reductions concurred in by several purchasers usually do not merely happen, without some foundation of market weakness; and so the whole market situation has come under close scrutiny, with the result that there has been a wide agreement in the desirability of maintaining increased vigilance over crude production and refinery runs.

It is to be expected, therefore, that coming months will bring tightened restrictions on crude output, with the view toward stabilizing the markets for crude and products and warding off the threatened spread of crude cuts throughout the Mid-Continent.

Shutdown Suggested

That the situation was regarded as serious in Austin was shown by the concern of the Texas Railroad Commission. The first move was to telegraph Leon Phillips of Oklahoma, chairman of the Interstate Oil Compact Commission, urging the calling of a special meeting to consider further curtailment of production. The wire, sent by Lon A. Smith and Jerry Sadler, of the Texas commission, carefully avoided suggesting a statewide shutdown. However, Smith said he was clearly convinced that there was too much oil production and that the only salvation was a shutdown.

It was because the crisis seemed localized that Smith did not suggest a statewide shutdown in the telegram. While no communication was received directly from Governor Phillips, press reports from Chicago quoted him as saying he would call a compact meeting as soon as he returned home.

Smith displayed a telegram from one Wichita Falls operator asking for a 15-day shutdown, and he said another concern had phoned asking for a 30-day shutdown.

Sinclair Allowable Cut

Commission officials seemed to be concerned only with some method that would reduce the output in areas where too much production was appearing, and it was indicated that allowable might be revised downward in such regions.

In line with that idea, the commis-

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[9]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,100	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[1]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 6	3,602,400	3,575,000	261,632,000	93,275,000	34,730,000	105,343,000
July 13	3,560,750	3,565,000	.....	92,372,000	36,221,000	105,710,000
July 13, 1939	3,529,700	[8]3,448,000	[4]269,348,000	79,263,000	33,329,000	113,839,000
Change in past year	+0.9%	+3.4%	—2.7%	+16.5%	+8.7%	—7.1%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, July 8, 1939. [5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] July, 1939 daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent States.

sion's first move was the cutting of allowables in the Walnut Bend field of North Texas from 60 to 35 barrels daily per well, a reduction of the field allowable from 3420 to 1996 barrels daily. That field is the main source of supply for the Sinclair company's Fort Worth refinery.

Smith recalled that at the last statewide hearing, June 19, the Sinclair Prairie Company had announced it was abandoning pipe line proration in Texas as of that date, and on this basis company officials urged that the commission order no shutdown. Thereafter, the Sinclair had requested and obtained an increase in its allowable for the Walnut Bend field, where it is the principal operator.

Commission records show that at the statewide hearing in June, Sinclair Prairie had not only nominated to purchase the oil it had indicated previously it would buy, but in addition asked for increases in East Texas, the K-M-A and Walnut Bend areas. These increased amounted to approximately 8000 barrels a day.

National Market Picture

Meanwhile, Sinclair Prairie Marketing Company remained alone among major companies that had slashed crude postings in the Mid-Continent, although attended by several independent refining concerns. And the only districts that had been affected were North Texas, West Central Texas, East Central Texas, and Southern Oklahoma. Purchases aggregating about 35,000 barrels daily were involved.

Generally, therefore, the Mid-Continent crude market late last week was standing its ground, as was the unstable California crude market, although the market for Pennsylvania grade crude had receded further on July 12, when the third 25-cent cut within six weeks occurred. After having been reduced on May 22, June 18, and July 12, prices were $2 a barrel in the Bradford-Allegany districts, $1.65 in Southwest Pennsylvania, and $1.59 in the Eureka pipe line system, West Virginia. Buckeye crude of Ohio was cut 25 cents a barrel July 12 to $1.55 a barrel. The reductions of Pennsylvania-grade crude prices have reflected the hitherto uninterrupted decline of lubricant prices, which got under way early this year.

North Texas Crude Cut

Panhandle Refining Company effective July 16 posted a flat price of 75 cents a barrel for fields of Wichita and Archer counties, North Texas, including K-M-A, where the company has been buying in all about 2000 barrels of crude daily, for processing in its Wichita Falls refinery. The new flat price was lower by 4 to 28 cents a barrel than the previous, gravity-scale postings, which had ranged from 79 cents for 28 gravity to $1.03 for 40 gravity and above.

In explanation of the reduction, an official of the company was quoted as saying that the differential between the price of crude and the prices obtainable for refined products was too narrow to cover the cost of manufacture; that the move was necessary to permit breaking even on refining.

Increased significance was seen in the North Texas price revision when it was met by the major company, Sinclair Prairie Oil Marketing Company, largest buyer in North Texas, effective July 16. That concern adopted the 75-cent flat price for purchases of about 1000 barrels daily in the Mexia district, East Central Texas, 3000 barrels in the Ranger district of West Central Texas, and 23,000 to 25,000 barrels in North Texas, especially in the K-M-A, Hull-Silk, and Consolidated fields. (Necessarily exempt from the reduction were purchases of Sinclair at Mexia under the contract by which the late Colonel Humphreys sold 33,000,000 barrels of crude to Sinclair and the Standard Oil Company of Indiana at $1.50 a barrel, a contract later acquired by Pure Oil Company, which still is delivering some oil on that basis.)

The 75-cent price also was met by Olney Refining Company, purchaser of about 1000 barrels daily for a refinery at Olney, Texas, and by La Salle Petroleum Corporation, of Burkburnett, Texas, also buyer of around 1000 barrels daily.

Oklahoma Prices Lowered

A special situation was involved in the posting of a new, reduced price by Rock Island Refining Company for crude in the Tussy pool of southern Oklahoma, as purchases heretofore have been spasmodic. Effective July 16, the company posted a flat price of 60 cents a barrel for the field, or 9 to 12 cents less than previous prices for the oil of 23 to 24 gravity involved. The company henceforth will take 10 barrels daily from each well to which it is connected, or 700 barrels a day from the pool.

Situation in Texas

The reductions in North Texas constituted a surprise development, as there was no forewarning in the form of pipe line proration, unconnected wells, distress selling of crude, or piling up of crude in storage. The crude market situation had been generally regarded as firm in North Texas and West Central Texas as well as in West Texas, New Mexico, and other adjacent districts of the Mid-Continent. (Sinclair Prairie Oil Marketing Company on June 19 discontinued pipe line proration in the K-M-A and Hull-Silk areas of North Texas and began purchasing 100 percent of allowable production.)

The principal weak spot in the market has been the East Texas field, where possibly 300 to 500 wells have been without definite market, following the material increase of the field's allowable through reinstatement of the potential basis of proration. Included in this estimate are some unconnected wells and wells that are feeding into storage in the absence of market demand.

Meanwhile, the Texas Railroad Commission has indicated that it will not lower the allowable in the East Texas field except in conjunction with reductions for the remainder of the state.

Another district of Texas in which market difficulties have developed is the Corpus Christi area, where loss of export business has forced crude upon the markets at prices materially under the established postings. The La Rosa field of Refugio County is among the areas where trouble has been encountered in disposing of crude. About 10 days ago Amsco Pipe Line Company reduced the prices of La Rosa crude 25 cents a barrel below the regular Refugio district postings, having posted prices of 66 cents for below 20 gravity, 68 cents for 20-20.9 gravity, then a 2-cent differential to $1.08 for 40 gravity and above. The major company postings range from 91 cents to $1.33.

Apparently the Texas Gulf Coast had about 450,000 barrels of gasoline

PRODUCT PRICES

REFINED GASOLINE

	Range Last Week (Cents a gal.)		Changes from week Before	
Oklahoma Refineries:				
60 Octane and under	4	4¼	...	...
63-66 Octane	4¼	4¾	...	...
72-74 Octane	4¾	5¼	...	...
Mid-Western Tank Car:				
60 Octane and under	4	4¼	...	...
63-66 Octane	4¾	4¾	...	...
72-74 Octane	4¾	5¼	...	...
New York Harbor:				
70 Octane and under	6	6¼	...	...
72-74 Octane	6	6¾	...	...

NATURAL GASOLINE

Grade 26-70:				
F.O.B. Group 3	1½	1½	...	...
F.O.B. Breckenridge, Texas	1¼	1¼	...	...

KEROSENE

Oklahoma Refineries:				
41-43 water white	3⅞	4¼	...	...
42-44 water white	4	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	3⅞	4¼	...	...
42-44 water white	4	4⅝	...	...
New York Harbor	5½	5½	...	...

RANGE OIL

At Oklahoma Refineries	3⅝	3⅞	...	...
In Mid-Western Market, Group 3 basis	3¾	3⅞	...	...

LIGHT FUEL OILS

Oklahoma Refineries:				
No. 1 straw	3¾	3⅝	...	...
No. 3	3¼	3⅜	...	...
Mid-Western Tank Car:				
No. 1 straw	3½	3⅝	...	...
No. 3	3½	3⅜	...	...
New York Harbor:				
No. 1	5½	5½	...	...
No. 3	4.4	4.4	—.35	—.35

HEAVY FUEL OILS
(Per Barrel)

	Range Last Week (Cents a gal.)		Changes from week Before	
Oklahoma Refineries:				
No. 6	55	55	...	...
Mid-Western Tank Car:				
No. 5	75	75	...	...
No. 6	50	55	...	...
New York Harbor:				
No. 5	$1.55	$1.70	...	...
No. 6	1.25	1.35	—.10	...

BUNKER C FUEL OIL
(Per barrel, ships bunkers)

Gulf Coast	$ .80	$ .95	...	...
New York Harbor	1.25	1.35	—.10	...

DIESEL OIL
(Per barrel, ships bunkers)

Gulf Coast	$1.50	$1.70	...	...
New York Harbor	1.80	1.95	...	...
Los Angeles Basin, 27 gravity	1.20	1.40	...	...

LUBRICATING OIL

Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	14½	17.5	...	—1
Neutral oil, pale, No. 3 color, 150 viscosity at 100° 0-10 pour test	8	10.25	—½	—¼
Western Pennsylvania:				
Bright stock, 145-166 viscosity, at 210°, 25 pour test	13	14	—1	...
Neutral Oil No. 3 color, 150 viscosity, at 70°, 25 pour test	19	19	...	...

which its owners have found difficult to hold. The remainder of the surplus is held by independent and major refiners who are well able to wait until the price strengthens, and need not dump their production. Some of this gasoline began to move early last week, 300,000 barrels being sold by one independent refiner on one day. This was the first bright spot that the independents have seen for several months.

Background for Cuts

While it was hoped that the crude price reductions would not become general in the Mid-Continent, students of the economics involved pointed out that the best way to assure maintenance of established crude prices or to improve product prices in furtherance of a firm crude market was through a reduction in refinery runs and a complimentary restriction of crude production.

For it was difficult to explain away the explanation that the Panhandle company made in connection with its initiation of the crude price cutting. It would have required very little investigation into the market situation to find supporting evidence that prevailing product prices left very little if any opportunity for profit for refiners.

Back of the crude price reductions were not only the surface conditions evident in the crude market itself but also the more deeply seated conditions reflected in the markets for gasoline and other refined products.

For ultimately, the value of crude oil depends upon the prices that can be obtained from the refined products derived therefrom, and it is quite evident that retarding and depressing influences have accumulated around petroleum product prices since United States business in general started on a down trend after reaching a pinnacle late last year.

Adverse Circumstances

Some of the adverse influences have been of general nature and beyond the control of the oil industry itself, but others have been of the industry's own making.

Outside the control of the industry has been the sharp curtailment of petroleum exports, but the industry has been responsible for, complacent with, or at least aware of an overbuilding of gasoline storage, which finally has become a millstone.

Gasoline prices have sunk from fairly satisfactory levels last fall to around the lowest levels on record, and the present low prices necessarily are affecting the crude market, despite the fact that prices of most other petroleum products have remained comparatively good.

The markets for refined products have been influenced within the past year, in turn, by extraordinary situations with regard to both supply and demand.

Following the outbreak of the European war, which happened to occur simultaneously with the purging of the oil markets through the half-month shutdowns of Mid-Continent fields, there was a strong demand for both crude and refined oils, based not only on actual requirements but also on the psychology of the period. Consequently, there has occurred since last fall a large rebuilding of crude oil stocks along with a piling up of refined product stocks. But in the meantime, there has occurred also an inexorable shrinkage of exports of both crude and refined oils, instead of an expected expansion. This combination of developments has left the industry long on inventories of gasoline and to some extent oversupplied with crude stocks. And the war developments within the past two months have accentuated the market difficulties, decreases in exports having all but canceled the benefits of gains over a year ago in domestic demand.

In the first half of 1940, crude oil stocks in the United States increased 23,000,000 barrels and stocks of products were expanded 15,000,000 barrels. That aggregate accumulation of oils represented an average piling up of 208,000 barrels daily in storage.

In Texas alone, where the recent crude cuts centered, over 50,000 barrels of crude oil went to storage daily, along with substantial quantities of refined products, in the first 6 months of this year.

However, Texas conservation officials have taken cognizance of less favorable market conditions, and for this month, the state's crude production allowable has been set about 140,000 barrels daily, or 10 percent, under indicated market demand, as estimated by the Bureau of Mines.

In June, under stricter allowables than formerly, there were withdrawals

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand in July	State Allowable in July	BARRELS DAILY FOR WEEK ENDED July 13	July 20
TEXAS—				
Texas Panhandle			58,950	65,800
North Texas			83,700	83,900
West Central Texas			28,950	28,100
West Texas			178,800	181,650
East Central Texas			69,850	71,550
East Texas Field			374,600	374,750
South Texas			169,850	172,850
Texas Gulf Coast			175,800	186,850
Total Texas	1,339,400	1,236,740*	1,140,500	1,165,450
CALIFORNIA—				
Long Beach			44,200	44,200
Midway-Sunset			58,300	50,200
Kettleman Hills			44,700	49,500
Wilmington			85,500	84,600
Others			392,300	389,200
Total California	593,900	587,000†	625,000	617,700
OKLAHOMA—				
Oklahoma City			105,500	98,700
Seminole Area			110,300	112,250
Others			207,650	201,100
Total Oklahoma	403,900	408,100	423,450	411,850
ILLINOIS—				
Salem			211,200	206,650
Centralia			125,600	112,250
Louden			71,000	72,000
Other New Pools			81,500	78,300
Old Pools			9,900	9,800
Total Illinois	402,300		499,200	478,800

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand in July	State Allowable in July	BARRELS DAILY FOR WEEK ENDED July 13	July 20
LOUISIANA—				
North Louisiana			65,950	67,850
South Louisiana			217,100	217,900
Total Louisiana	278,100	280,371	283,050	285,750
KANSAS	159,400	159,400	178,200	189,300
NEW MEXICO	106,100	106,100	105,500	105,100
EASTERN STATES—				
Pennsylvania Grade	47,900		68,100	70,150
Others, Eastern	46,200		19,800	19,900
Total Eastern States	94,100		87,900	90,050
MOUNTAIN STATES—				
Wyoming	80,600		76,250	75,100
Montana	18,100		19,600	19,200
Colorado	4,800		3,950	3,850
Total Mounrain States	103,500		99,800	98,150
MICHIGAN	61,600	54,000§	56,100	55,100
ARKANSAS	67,400	73,000	72,375	72,250
INDIANA	9,000		13,500	11,800
MISSISSIPPI	9,700		7,200	8,000
NEBRASKA			175	250
‡Total 8 Prorated States	3,009,800	2,992,971	2,884,175	2,902,500
Total United States	3,628,400		3,591,950	3,589,550

* Net daily average, considering general shutdowns on July 4, 7, 10, 14, 18, 21, 28.
† Recommendation of Central Committee of California Oil Producers.
§ Department of Conservation estimate of actual production.
‡ Texas, California, Oklahoma, Louisiana, Kansas, Arkansas, Michigan, New Mexico.

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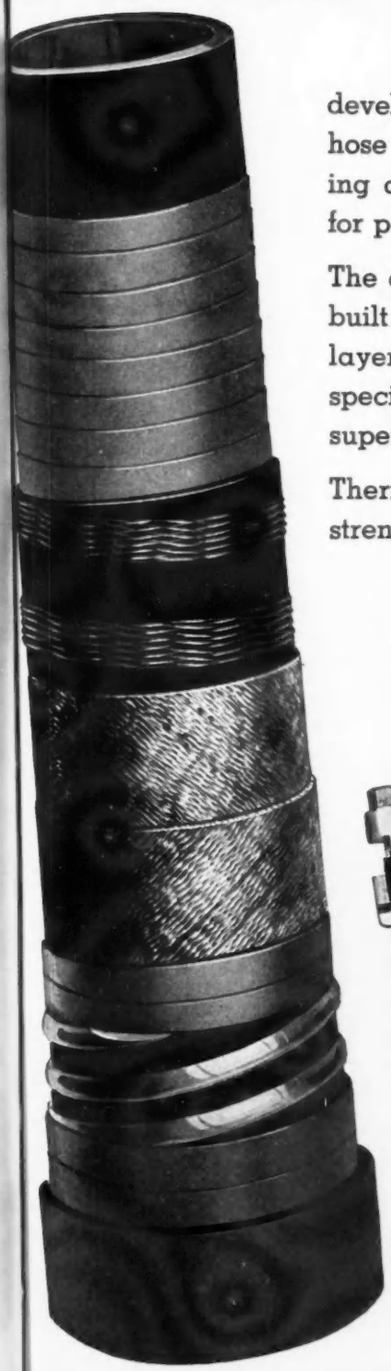

FROM Thermoid engineers—who have pioneered two major rotary hose developments in the last five years—comes the design for the still further improved hose you see here. Available in four distinct constructions—one for each basic drilling condition—the new improved Thermoid Rotary Hose is setting new standards for performance throughout the oil country.

The cut-back section at the left illustrates Thermoid's new No. 3520 Rotary Hose—built to withstand initial test pressure of 5000 pounds. It is reinforced with three layers of braided wire applied at reverse angles for maximum flexibility, plus a special crescent-shaped wire which adds extra strength. This hose assures vastly superior performance in all regular drilling.

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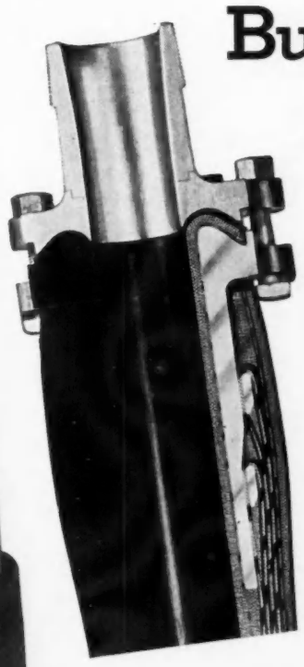
Built-in Couplings



Adding to the efficiency and economy of Thermoid Rotary Hose is a coupling that is really "built-in"—one that actually becomes an integral part of the hose itself.

The illustration shows how this new coupling provides an absolutely smooth inner contour. There is *nothing* to interrupt the flow at the connection! Other important advantages include:

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- **Complete coupling is considerably lighter in weight.**
- **Positive elimination of coupling leaks and failures.**
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from storage in Texas averaging about 75,000 barrels daily, and under July allowables, average withdrawals of approximately 100,000 barrels a day are indicated.

So far, states other than Texas have not tightened allowables sufficiently to promote correction of the oversupplies that have been built up, and improvement of the general situation would be brought nearer reality through cooperation of those states, such as that promised in the contemplated meeting of the Interstate Oil Compact Commission.

In spite of the several local slashes in crude oil prices, quotations for refined productions other than lubricating oils showed little reflection of the general situation last week and remained steady.

Mid-Continent gasoline demand remained steady, and consumption was reported fair in the Middle West. Refiners reported that contract buying was good and probably would exceed previous estimates for the month. Gasoline prices were generally unchanged, although several suppliers quoted small reductions on the southern Atlantic seaboard, in reflection of further declines in domestic tanker rates. There were also several unconfirmed reports of gasoline offered at a quarter of a cent off the market by Chicago tank car marketers. Generally, the gasoline situation seems to be improved, and it is not expected that wholesale prices will be lowered materially further, as the margin of profit for refiners already has been virtually wiped out.

Sinclair Says Shutdowns Will Not Remedy Situation

Absence of Texas Railroad Commissioners from Austin late in the week apparently prevented further action on the price-cut situation after the cut in the Walnut Bend field. Commissioner Sadler was expected in Austin Sunday, and Chairman Smith thought something definite would be worked out by Monday.

The commission was considering calling a state-wide emergency proration hearing, if possible in conjunction with a meeting of the Interstate Compact Commission. The commission also contemplated closing down all fields along the Sinclair pipe line in the area where the price was cut in order to permit commission engineers to take bottom-hole pressures under closed-in conditions.

In a telegram addressed to D. H. Bolin of the North Texas Oil and Gas Association, H. F. Sinclair Friday gave his version of the situation. Bolin had wired Sinclair and urged that he consider the gravity of the situation.

"I agree with you," Sinclair said, "as to the seriousness of the situation with which you and all of us are faced and I am also ready to take serious measures to remedy it. As to the price reductions recently posted in your area, we met competition by following the postings previously made by others. The fundamental causes for this situation go far beyond North Texas and beyond any power of correction that you or we can apply locally. I am sure, however, that we can never correct the situation until the facts are publicly disclosed and frankly faced.

"Shutdowns of production are not the remedy. Retaliatory and illegal reduction of allowables in isolated cases can have no beneficial effects on our problems. As to the crude prices standing alone as one factor in the situation, in my opinion a dollar is not enough for a barrel of crude oil.

"The price should be higher but by no kind of artificial restoration or regulation can manufacturers continue indefinitely to pay more for raw materials than they receive from the products made therefrom. The newspapers state that early meetings of the compact commission and the railroad commission are being sought for the purpose of taking measures to meet the existing situation.

"I am heartily in favor of this step and wish to be heard in such meetings, but when held there should be a searching disclosure of the real causes of our troubles—facts not theories. This discussion should deal with the facts of production in unprorated areas and with foreign imports.

"The industry is being subjected to false and misleading propaganda concerning the importation of foreign oil. The discussion should not be concerned merely with how much or for how long proration should cut back. There might also be some helpful discussions of the influences that prevent the average refiner from getting prices for his products that would enable him to pay a reasonable price for crude.

"Such discussions would be helpful to all of us in devising remedies for which we are seeking just as earnestly as you are."

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Patent Pending

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U. S. FIELD OPERATIONS

Illinois

Bond Test Plugs to Benoist; Devonian Weak at Irvington

Bond County's most watched wildcat, National Petroleum Company's Spindler Investment Company 1, CNW NW NW 10-6n-2w, was to be plugged back for testing a Benoist section at 1009-38 feet after Misener sand at 2297-2317 showed salt water and only a slight amount of oil. The Misener was shot twice, once with 1½ quarts and the second time with 2½ quarts. Pipe was believed to have been damaged in shooting.

In Washington County, Gulf Refining Company's Buhl 4, SW½ SE SW 23-1s-1w, was making a drill-stem test of Devonian at 3150 feet following an electric log of the formation. Operators indicated prospects for a good producer were slim. The test, first to explore the Devonian in the newly opened Benoist sand pool at Irvington, topped Glen Dean at 1212 feet, Cypress at 1375 feet, St. Genevieve at 1696 feet, Rosiclare at 1715 feet, Fredonia at 1735 feet, and Devonian at 3088 feet. The company's Stanton 1, NW 26-1s-1w, swabbed 132 barrels of oil and no water in 24 hours from Benoist at 1559½ feet. The well is the field's southwest outpost. Gulf Refining Company's Stanton 2, one location east of No. 1, swabbed 52 barrels of oil and no water in 24 hours from 1564 feet. Both wells had been given light shots.

Near Ashley, Washington County, Henry Kyatt's Terrapin Smith 1, wildcat in SE 23-2s-1w, was drilling below 1550 feet, expecting the Benoist momentarily. A stain of oil in the Tar Springs at 1280 feet was reported.

The second prospective producer in the comparatively new Raymond pool of Montgomery County cemented casing to Pottsville sand. Babler Investment Company's Street 2, NE SE 31-11n-5w, set pipe to 602 feet after recovering a good show. The discovery is pumping 30 barrels of 31-gravity oil daily. A Devonian test in the pool, Babler Investment Company's D. Street 1, SE 31-11n-5w, was drilling at 800 feet after topping St. Louis at 676 feet. Pottsville sand at 622-42 carried saturation.

Salem Outpost Dry

A northwest outpost to the Lake Centralia-Salem pool of Marion County, Magnolia Petroleum Company's Dora McIntosh 1, NE 19-2n-2e, was abandoned at 3550 feet in Devonian lime.

The drilling program on the Clinton County side of the Centralia field was rapidly dwindling as most of the heavy producing area in Sections 1-1n-1w and 35-2n-1w was drilled up. Gulf Refining Company, most active operator in the area for the past few months, completed its only two active tests, Adams-Schmitz 3, SE 2-1n-1w, flowing 1900 barrels of oil and 253 barrels of water in 24 hours from 2905 feet, and Ellerman-Buehler 2, SW 36-2n-1w, flowing 649 barrels of oil and 143 barrels of water in 18 hours. Both gauges were after acid treatments. A west outpost, Joe Carroll and Bill Morgan's Allison 1, SW 35-2n-1w, flowed 490 barrels in 7 hours following acid treatment at 2901-14 feet. Allison 2, one location south, cemented casing to test pay at 2903-12 feet, and ran considerably higher than had been anticipated. Further west ½-mile, Bert Fields' outpost, S. Prather 1, NE 3-1n-1w, was to be abandoned after finding Devonian dry.

Coles Wildcat Dry

A Coles County wildcat, Carter Oil Company's Vincent Ohm 1, E½ NE NE 10-11n-7e, was abandoned at 2125 feet. Only immediate operation planned in the county is a wildcat, Tex Harvey's Park Irvin 1, SW 36-13n-9e, 2 miles northeast of Charleston, for which a permit has been granted.

In Edwards County, Herschback Petroleum Company's M. L. Perkins 1, NE SW SW 2-3s-10e, was shut down on orders after a drill-stem test in Biehl sand at 1962-80 feet. The hole had been plugged back from 3275 feet through the McClosky which was dry.

Indiana

Shallow Daviess County Area Extended a Mile Northeast

In Daviess County, Barr Township, the old Cannelburg field was extended a mile northeast with J. W. Cannon's Anna and Lewis Hart 1, SW NW 4-2n-5w, rated a 10-barrel well in the Brown sand at 574-84 feet. It will be shot.

In Harrison Township, Daviess County, D. L. Norris' J. W. Connelly 1, SE NE 33-2n-6w, will be completed as a light gas well in Devonian at about 2186 feet. Bottom, with no commercial oil shows in the Devonian, was at 2370 feet.

In northern Posey County, 4 miles east of Griffin, Max Cohen had derrick up for G. G. Williams 1, NW NW 4-4s-14w, wildcat a mile south of production.

In northwest Posey County, Continental Oil Company set casing to 19 feet of Aux Vases sand saturation, topped at 2781 feet, in L. P. Kleiderer A-1, NE NE NE 33-3s-14w, just south of C. R. Obermeyer's Kleiderer 1, Aux Vases producer.

In the Heusler Dome field of Marrs Township, Posey County, Creager-Williams-Lewis' Deitz 1, NE NW SE 1-7s-12w, was completed in Waltersburg sand for an estimated 15 barrels a day.

In eastern Gibson County, Center Township, Newton Pipeline Company abandoned William Carrithers 2, SE SE 26-1s-10w, after a prolonged fishing job at 1500 feet.

In Floyd County, Greenville Township, L. D. Albertson et al's Vernon McKown 1, was abandoned at 1035 feet.

In southwest Robinson Township, Posey County, Nelson Development Company located for Peter Hortsman 1, east offset to Gulf Refining Company's William Lang 1, Mansfield-sand producer. Northwest of Caborn, Marrs Township, Paul Rossi set surface casing for Ed Egli 2, SE SE NW 19-6s-12w, wildcat McClosky test.

In Point Township, Posey County, La Salle Drilling Company's People's Savings Bank 1, SE NW SW 26-1s-15w, recemented to shut off water after drilling plug to Aux Vases.

Forest City Basin

Test on Kansas Side Makes Large Gas Well

With three fields assured Nebraska, interest last week turned to Kansas where McLaughlin's Darks 1, SW SW 4-10-20e, Jefferson County, was showing for an estimated 14,500,000 cubic feet of gas from sand at 1400 feet. Pay was topped at 1391 feet. The same operator's Frazer 1, SW SE 22-9-18e, 13 miles northwest of Darks 1, was drilling below 400 feet with cable tools.

Indian Territory Illuminating Oil Company's Schaible-Kuttle 1, CNE SW 29-3n-16e, in Falls City area, Nebraska, tested for 300 barrels of 31-gravity oil daily from Hunton lime after treatment with 500 gallons of acid. Operators may treat a second time.

Uhri Oil Company's Ogle 1, NE SE SE 9-1n-14e, 10 miles west of Falls City, Richardson County, which failed to show favorably when first drilled into the pay, appears to be a commercial well with completion at 2260 feet in Hunton lime. Five-inch is set at 2256 feet. When plugs were drilled, the test filled 1400 feet with fluid and swabbed 35 barrels of oil in 24 hours. After treating with 500 gallons of acid, it swabbed 332 barrels of fluid in 9 hours, one-third oil. A packer was run on tubing to shut off water. Gravity of the oil, not yet clean, is 29 degrees. During the last five days, the test tanked more than 500 barrels of oil.

What may be the first successful try in basin sector of Missouri was showing for Hunton-lime production. Brin & Nathans Decker 1, CNW NW 1-61n-38w, Holt County, topped Hunton at 2219 feet and a sample at 2298-2308 feet showed good saturation although no test could be made due to intrusion of fresh upper water. Operator was lowering casing to cement at top of the saturation and will then test. Oil showed through some 2000 feet of water. The test cut Mississippi lime at 1868-2159 feet and found the Kinderhook section thin to point favorably before the Hunton was reached.

Oklahoma

Okfuskee County Test Shows Good Cromwell Sand Well

Reese Drilling Company's Berryman 1, NW SW SW 36-11-8e, Okfuskee County, drilled Cromwell sand at 3462-3475 feet, set 7-inch casing at 3459 feet, and began flowing into hole as plugs were drilled. Early estimates of productivity rate the wildcat capable of 500 to 1000 barrels daily. Tankage is necessary for a production test.

A second well for Prague pool, Lincoln County, was assured at Midstates Oil Corporation's Prozmic 1, SWC 33-12n-6e, north offset to the discovery, which tested 307 barrels of crude while cleaning out. Production is from a good body of Skinner sand at 3266-88 feet. As the well found the pay at a structural level comparable with that of the discovery, the outlook for the sector is better than first appeared probable. Skinner-sand pools in the trend are generally of confined area, usually producing from only one or two wells, but the present development may be more extensive if the two wells may be taken as indicative.

A new pool for Payne County was indicated at Elson, Conhaim and Portable Drilling Company's Murphy 1, SEC NW 20-19-2e, 6 miles northeast of Ramsey pool, which found Hunton lime at 4555 feet and drilled to 4569 feet. On drill-stem test, it flowed 670 feet into the pipe with considerable gas pressure. While the test indicated a good well in the Hunton, operators will deepen to the Wilcox, which affords prolific production in Ramsey pool.

A new producing zone was proven for Cumberland pool, Marshall County, where five wells are going down. Pure Oil Company's W. L. Thomas 102, SW NE NW 28-5s-7e made a one-hour drill-stem test of the Bromide section and recovered 1140 feet of oil and 180 feet of drilling mud. Hole is being deepened to the lower pays.

Mid-Continent Petroleum Corporation's Ferguson 1, NE SW SW 18-7n-8e, Seminole County, which last week showed for a new pool, gradually increased its production on initial casing test. The well began making little more than a spray of oil when first opened, but the oil kept increasing and 68 barrels were tanked at the conclusion of a 12-hour flow. At that time the well was making about 10 barrels per hour. A later flow produced 127 barrels in 10 hours. With control of the large gas volume, gauged at 14,600,000 cubic feet, the crude is expected to increase. Production is from Wapanucka lime and Cromwell sand at 3475 feet. The well is west of Fish pool on a separate structure.

Okfuskee Wildcat Plugs to Hunton

The Texas Company's Cowan 1, SWC 5-11n-10e, northeast of Okemah, Okfuskee County wildcat, was testing Hunton lime at 3730 feet after drilling to a dry Wilcox zone. Shows were encountered in the Hunton when drilled. Helmerick & Payne's Fire Shake 1, wildcat in the Yale sector of Noble County, SEC NE 11-24-3e, was drilling a sandy section at 4118 feet.

Activity has been increasing in the Osage area where a number of small pools have been opened during the past few years as a result of a secondary search for less pronounced structures. In that area, Charles Petroleum Corporation et al's Tucker 2, CNL SW 3-28-11e, in the edge of south Hickory pool, Osage County, was a completion testing 100 barrels daily. Pay is Wayside sand at 897-939 feet.

Another north extension was given Hobart pool, Kiowa County, Southern Oklahoma, by Argo Oil Company's Ratliff 1, SE NE NE 19-7n-17w. The well found only a spray of oil on initial test, with a high gas volume, but after acid at 1048 feet, it made 49 barrels an hour with gas estimated at 5,000,000 cubic feet through tubing. This volume is a decrease of 15,000,000 cubic feet from the original showing at 917 feet.

A strike near the southeast edge of Little River, Seminole County, has either opened a new spot or a nose from the pool. W. B. Davis' Tholocco 1, NW SW NW 30-7n-7e, topped Senora sand at 2250 feet, cemented casing on the pay after drilling to 2275 feet, and when the plug was drilled showed oil and considerable gas.

The pool-opener northeast of Okemah, Okfuskee County, Burke-Greis Oil Corporation's Dew 1, has been testing from 5 to 10 barrels hourly with gas estimated at 3,000,000 cubic feet from Hunton lime at 3879-3906 feet. It is expected that operators will not complete without treating, after which another gauge will be made.

Mid-Continent Petroleum Corporation staked Johnson 2, CE½ SW SE 2-17-1e, an east offset to a good producer in Coyle pool, Payne County, which will aid in defining this side of the pool. Another location further east failed to find the pay.

Two wildcat locations in north Tillman County, southwest Oklahoma, will be followed with more than usual interest in view of the Frederick trend. One is Kirksey et al's Garner 1, NE SW SE 24-1n-17w, now shut down for repairs at 625 feet, and the other is Paul Helf's Ball 1, NE NW SW 30-1n-17w, a location.

Continental Oil Company's School Land 1, CNE 16-8n-16w, wildcat southeast of Cordell, Washita County, scheduled to go to 10,000 feet, or Simpson sands, cut granite wash at 3005 feet and was drilling below 7710 feet.

Kansas

Stafford County Test Fails To Respond to Treatment

Stanolind Oil & Gas Company's Ahnert 1, SE NE 10-22-12w, south of South Sittner pool, Stafford County, was testing Arbuckle lime at 3635 feet. When drilled a week ago, operators reported a fair show which did not respond to acid. It made from 3 to 4 barrels per hour, and will be treated a second time. A producer will more probably be a Sittner extension than a new field. In the latter case, it would bring some 300 acres into the play, but even if it fails to complete commercially, the outlook for the area between the pool and the well is brightened by the showing encountered. The same firm's Charles 1, CNL NE SE 15-24-12w, in the same county and only a short distance west of Stafford, found Viola lime at 3815 feet and was drilling below 3900 feet towards Arbuckle lime.

The Texas Company's Hemmeke 1, CNL NW NE 38-19-12w, north of Wolf pool, Barton County, topped Arbuckle at 3379 feet and bailed down to run electric log. Completion as a producer will give Wolf pool a minor extension.

Krier pool, Barton County, received a ½-mile southwest extension at Springer et al's Oeser 1, CE½ NE SW 30-16-11w. On test, it made a 50-barrel pumping potential from Kansas City-Lansing at 3825 feet.

In Ellis County, Gulf Oil Corporation's Arnhold 1, CN½ NE SE 36-13-17w, southwest of Sander pool discovery, failed to show in the Arbuckle at 3563 feet, topped at 3541 feet. Although the Arbuckle level corresponds to the discovery, 1½ miles northeast, only a slight show was reported.

In Cowley County, a semi-wildcat northwest of David pool, J. Alyward et al's H. Hanlen 1, SW NW NE 35-20-4e, was showing for Bartlesville-sand production. Pay was topped at 2956 feet and drilled to 2965 feet, where the test had 2000 feet of oil in the hole in 6 hours.

The Texas Company's Brown 1, CE½ SE NW 2-16-10w, is a west offset drilling at shallow depths to W. C. Emerich's Hagy 1, CW½ SW NE Section 20, a pool opener recently completed for 240 barrels of 43-gravity oil from Arbuckle at 3348 feet.

Burrton Extended

Burrton pool of Harvey County received a ½-mile extension in Mississippi lime at Westgate-Greenland Oil Company's Graham 1, SW NW 31-23-3w. Lime, topped at 3341 feet, was drilled to 3352 feet and showed for commercial production.

With current activity in Forest City Basin, operators have been closely watching tests in the Salina Basin sector of Kansas. Three wells in this district were showing, but not very encouraging. In McPherson County, Bay Petroleum Company's Coons 1, CW½ SW SW 13-19s-1w, east of Ritz-Canton, drilled to 3425 feet and was plugging back to test Mississippi lime at 2921-24 feet where gas and a slight show of oil were drilled. In the same county, Broadwater, Inc.'s Heaton 1, CE½ SE SE 28-17-1w, near production in Roxbury pool, picked up a light show in Kansas City-Lansing at 2130 feet and was below the Mississippi lime at 2830 feet. In Marion County, near Lost Springs field, Harrington & Loriaux's Belton 1, SE SE NE 30-17s-4e, found pumping production in Mississippi lime at 2412-15 feet, but the oil was cut with 50 percent water.

Immediately north of Lost Springs field, but in Dickinson County, Midland Oil Company's Haines 1, Section 23-16-4e, was standing with 500 feet of oil in the hole after penetrating Mississippi lime to 2379 feet, topped at 2329 feet. The test should complete for a commercial producer to give Dickinson County its first oil well.

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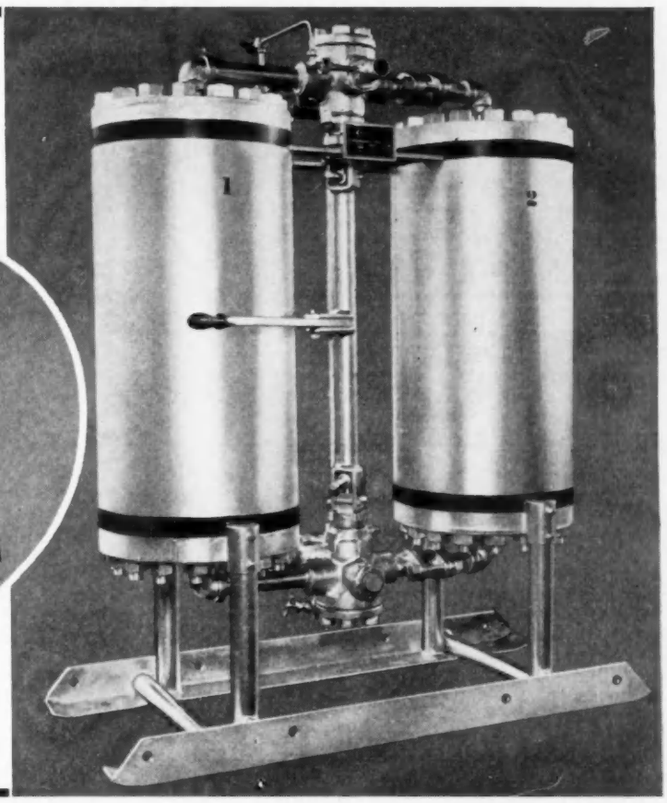

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West Texas

Flow Indicates Duggan and Slaughter May Be One Field

Potential flow of 458 barrels of oil developed by The Texas Company's Mallet 1-F, SWc Labor 25, League 55, Southeastern Cochran County, emphasizes the possibility of the Duggan and Slaughter fields being united for the second largest oil producing area in West Texas. Production followed two-stage treatment with 7000 gallons of acid in saturated lime at 5006-59 feet, with an elevation of 3627 feet. This completion is ¾-mile east by north of a small semi-wildcat pumper recorded by the company in May, 1938. It is 2⅞ miles southwest of nearest production in the Slaughter field, and 3⅞ miles southeast of the Duggan area, while it is 4¼ miles due south of the most northerly producer along the trend between the two fields.

Osage Drilling Company's Moore 1, 2¾ miles east of the most southerly production in the Duggan field, was drilling at 4730 feet, having logged top of lime at 4230 feet with an elevation of 3639 feet. It is level on structure. Osage Drilling Company contracted to drill 4 tests as part consideration for farmed out lease on 800 acres.

Sloan & Zook Company and Tom Sloan have started operations on Waples-Platter 1, C SW SE Section 565, ¾-mile northeast extension for the Waples-Platter one-well pool, Yoakum County. Shell Oil Company assigned acreage and pledged $7500 dry hole money in June for the drilling of the test to 5500 feet, or production. The area is on a northeast strike from the Bennett sector of the Wasson district.

Grady Vaughn and High Point Oil Company's Smith 1, C SE SE Section 703, ¾-mile northwest of nearest production in the Wasson field, will attempt to exhaust pocket of salt water logged in the pay section in drilling to 5253 feet. The well tests 200 barrels of fluid daily, with varying percentage of water after using acid. Top of saturation, according to electric survey, is at 5025 feet, with an aggregate of 135 feet of probable saturation. Exclusive of the Bennett sector, only one dry hole has been completed along the 12-mile north edge of the Wasson field.

Protection string of 9-inch pipe was cemented at 2965 feet by Texas Pacific Coal & Oil Company and Seaboard Oil Corporation's Midland 1-A, southeastern Andrews County wildcat. Top of anhydrite was logged at 1950 feet and base of salt at 2930 feet with an elevation of 2954 feet, indicating a favorable structural position. However, the test is 12 miles from nearest dry hole. Atlantic Refining Company's University 1-23, two miles south of the Andrews County wildcat strike made recently by Helmerich & Payne and Atlantic Refining Company, pumped 186 barrels of oil on 20-hour gauge. Production is from broken pay at 4250-4470 feet. The company's University 1-2, north offset to the discovery, has not been given a pumping test, although swabbing test after nitro shot indicated a producer. This area will be designated as the West Andrews pool, according to recommendations submitted to the commission by Berte R. Haigh, West Texas geologist for the University Lands.

An extension producer and prolific completion on the northeast edge of the Sand Hills field paves the way for considerable new development in this 10-year-old Crane County area. Humble Oil & Refining Company's Tubb 39, SW NE PSL Section 7, Block 32, earned an initial rating of 6096 barrels from Lower Permian saturation at 4248-4395 feet to become one of the largest natural completions. Gulf Oil Corporation's Waddell 12, two miles north of the big well drilled by bit at 4404 feet for a production increase at 4410-12 feet with the oil flow rated at 20 barrels hourly. The two companies control the acreage in the northeast portion of the structure. Gulf Oil Corporation's McKnight 5, northeast outpost for the McKnight sector of the Sand Hills structure, was drilling at 6905 feet, having changed to rotary at 6755 feet to continue to the Ellenburger. The Simpson, topped at 6430 feet, was dry.

Two new tests have been authorized for the Soma shallow oil and gas pool,

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western Crockett County, and operations are underway on J. K. Hughes Oil Company's Shannon 1, situated 2½ miles north by east of the discovery. M & M Drilling Company's Bouscaren 1, mile north of the initial producer, missed the Yates sand pay and is awaiting orders at 1491 feet with pipe cemented 4 feet off bottom. Soma Oil & Gas Syndicate's Noelke 2, is to be a short northwest extension test for the discovery site. Pittman & Cox's Noelke 1 has material on ground for a southeast offset to the discovery. Gregory-McCandless et al's Shannon 1, 3½ miles east by north of production, was drilling at 2230 feet.

Leases in Demand Around Hall County Block

Lease protection within and adjacent to Humble Oil & Refining Company's Hall County drilling block has been in demand since the company's Allie Weaver 1, NE S. P. Ry., Section 51, Block 1, registered high structural position on the Permian markers. The test was drilling broken lime and shale at 3820 feet in the upper Pennsylvanian, and will be carried to the Ordovician, which is due near the 7500-foot level. It is 8 miles southwest of Memphis, and lease buying has lately spread to the latter community.

In Childress County, The Texas Company's B. P. Smith 1, NW H&GN Section 97, Block 1, also a projected deep test on a trend between production in the North Texas and Panhandle districts, was drilling at 2160 feet.

Caddo-Lime Strike in West Central Eastland County

West Central Eastland County recorded a Caddo-lime discovery when Jones, Stasney, Groover and Rose's McElreath 1, C SW H&TC Section 104, Block 3, 5 miles southwest of Cisco, flowed by heads at a rate of 150 barrels of 42-gravity oil daily. The well indicated a natural yield of 20 barrels oil daily from broken saturation at 2962-3030 feet, with an elevation of 1641 feet, and the flow followed injection of 4000 gallons of acid solution. Acreage within the original drilling block found a ready market, and considerable development will follow if production embraces a substantial area. Danciger Oil & Refineries, Inc., purchased lease on 171-acre tract adjoining the discovery site on the east, and is credited with planning the first development.

Plan Shallow Campaign in Guadalupe County

Providing an extension of more than one mile to southwest in the Elm Creek field, Guadalupe County, Mason Altgelt is planning to drill a number of wells to develop the shallow Navarro sand reserve. The test found 46 feet of broken sand and shale at 674-710 feet in L. Lenz 1, E. Smith survey, and casing was set on bottom. When pumped, the test made 8 barrels of crude per day. The operator has several hundred acres in the area and plans a continuous drilling program which may bring 30 or more tests to this level.

North Texas

Clay County Wildcat Sets District Depth Record

Natural flow of 262 barrels of 47-gravity oil through choke in 3 hours was recorded by E. C. Norwood et al's Hapgood 1, Eastern Clay County wildcat on the west flank of the Worsham structure, from 12 feet of conglomerate saturation that was drilled to 5984 feet. This completion provides a producing depth record for North Texas. Production is from the Bend, topped at 5901 feet, by sample, or 261 feet lower on structure than W. B. Omohundro et al's Seay 1, 5704-foot Bend discovery for the Ringgold pool, situated 5½ miles east by north and in Montague County. Hapgood 1 is 3 miles west by south of 3400- and 3900-foot Strawn producers on the Worsham ranch. The Bend has not been explored between the new strike and the Ringgold pool. Bulk of the intermediate acreage is controlled by Gulf Oil Corporation.

The Hapgood test was obligated last March by Glenn Grimes et al in acquiring lease on 14 blocks of the Marion County School Land Survey for a cash bonus of

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$4 an acre. Deal was made with Norwood to fulfill a 6000-foot depth contract, and King Oil Company purchased one-fourth interest in the unsold acreage and the test for $8 an acre.

An oil completion for the Hapgood ranch was indicated when drill stem test at 5973-84 feet yielded flowing production with bottom hole pressure calculated at 2750 pounds. The well kicked off promptly after drilling plugs from 7-inch pipe, cemented at 5972 feet. After preliminary test through tubing, the well flowed 107 and 97 barrels the first two hours through ¾-inch choke. Choke was reduced to ¼-inch the next hour for a flow of 58 barrels of pipe-line oil. Tubing pressure dropped from 1300 to 950 pounds, and casing pressure was lowered from 1300 to 1100 pounds during the offiicial test. Gas volume was rated at 1520 feet per barrel. Phillips Petroleum Company and Tide Water Associated Oil Company supported the wildcat, and have direct offsets.

John Farrell et al's Malone 1, 5½ miles west by north of the Hapgood producer, logged top of Ellenburger dolomite at 6720 feet, and was drilling at 6760 feet. No shows of any consequence were found in the comparatively thick Bend section, topped at 6006 feet, or 94 feet low sub sea. Walter Gant et al's Edwards 1, 4 miles northeast of the latter, has been temporarily abandoned, testing little oil with water in Bend, topped at 5780 feet, after plugging back from Ellenburger at 5990-6354 feet for nitro shot and acid treatments. Comparatively thin section of Bend is found in the north portion of the conglomerate trend across Clay and Montague Counties. This was true of Sinclair Prairie Oil Company's Milam 1, 3½ miles northeast of the Ringgold discovery, slated for abandonment after failing to make a commercial producer in plugging back from Ellenburger at 5795-6000 feet to Bend, topped at 5590 feet.

Montague County's Two Wildcats

Western Montague County has 2 interesting wildcats as result of passing up oil shows. W. H. Peckham et al's Lawson 1, between Stoneburg and Belcherville, registered oil stain and odor in sand core at 5475-92 feet, and was drilling at 5545 feet in sandy-shale. Walter Gant et al's Will Laird 1, 6 miles southwest of Sunset and in the southwest portion of the county, was drilling shale at 5180 feet on a 7000-foot depth contract. Strawn production may result when the hole is plugged back for a test in the 4800-foot sand. Drill-stem test at 4857-71 feet yielded 10 feet of oil and 150 feet of oil-cut mud in 40 minutes.

Preliminary tests given 6 Bend wells underway as offsets to producers in the Bonita pool, eastern Montague County, was somewhat discouraging. Sinclair Prairie Oil Company's Doty 2, southwest of the discovery, failed to indicate production in either of the Bend pays, and was awaiting orders at 5624 feet, while Admire 1, south outpost, plugged back from 5700 feet to 5585 feet to run pipe with top of Bend called at 5274 feet. The company's Langford 1, west outpost, was drilling at 5290 feet, and Gilbert 1 was swabbing small volume of oil from lower conglomerate at 5440-56 feet in Bend, topped at 5206 feet, while Lee 1 was making production test with prospects of a prolific well from broken conglomerate saturation at 5406-38 feet. Oil flow followed drill-stem test at 5405-22 feet. Top of Bend was called at 5177 feet, and 5½-inch was cemented at 5404 feet. Magnolia Petroleum Company's Gilbert 2, east outpost, tested oil-cut mud when formation tester was used at 5380-5404 feet, and was coring at 5450 feet.

Four flowing wells and 6 pending completions at Bonita indicate that the oil zone is comparatively thin and erratic, although the top of the Bend marker is fairly flat. The sub sea depth of the Bend top on 7 tests varies from 4216 feet to 4277 feet. In the Nocona deep pool, involving a similar type of structure, top of the Bend has a greater variation, but the oil zone is more consistent.

Archer County has a promising deep wildcat awaiting production test from either Basal Strawn, or Bend horizon that was passed up by L. T. Burns et al's Turbeville 1-AA, Block 154, Robert Carson Survey, in fulfilling depth contract at 5091 feet. The last 3 feet of formation is reported to have registered oil saturation by sample analysis. However, the test was plugged back to 4650 feet and 7-inch pipe cemented at 4590 feet. This prospect is 5 miles southeast of the Mankins 4700-foot Bend area.

Foard County Well Indicated

Thomason Oil & Royalty Company's Gamble 1, near NWc of east 180 acres of S½ H&TC Section 314, Block A, Foard County, is showing for a small oil producer near a gasser completed from the same horizon last February. Intermittent production tests from sandy-lime at 2345-70 feet varied from 50 to 10 barrels of oil hourly. Foster Petroleum Corporation made location for Allee 2, a west offset and between the oil well and its gasser, which drilled to Ellenburger at 3340-3417 feet, then plugged back to 2350 feet for completion as a 1,310,000-foot gasser from perforated pipe at 2300-09 feet.

Forty-acre well spacing for the Fargo pool, quadruple oil producing area opened recently in northwestern Wilbarger County by Amerada Petroleum Corporation's Goodpasture 1, has been endorsed by the majority of the lease owners. Field rules are to be considered by the Texas Railroad Commission July 26 at Austin. Operators are credited with favoring the adoption of acreage and bottom-hole pressure as the method of apportioning the proration allowable between wells. The discovery began flowing July 1 while running tubing after perforating pipe opposite Canyon pay at 3230-52 feet. Initial test through tubing averaged 28 barrels per hour for 5½ hours through ½-inch choke, then 40 barrels hourly through ¾-inch choke. The well averaged 13.92 barrels of 40-gravity oil hourly for 11 hours through ¼-inch choke early last week after recovering pressure bomb, and will probably remain shut in until field rules are issued as no pipe-line connection is available.

Exploration of the Ellenburger formation is being made by Chapman & McFarlin's Wilson 7-E, inside test for the Hull-Silk field, Archer County, in drilling at 5090 feet. Top of the Ordovician dolomite was called at 4894 feet, considerably higher than 2 previous deep failures in adjoining section to the east, and trace of gas was reported in core at 4937-47 feet. The hole may be plugged back and pipe set for a production test in the Bend, topped at 4540 feet, according to sample, as drill-stem test at 4623-51 feet indicated probable production. Gulf Oil Corporation completed its fourth producer on the Siegel 117-acre lease from the intermediate Strawn lime at 3950-65 feet for an initial flow of 45½ barrels of 42.2-gravity oil in 1 hour through ¾-inch choke, making 3 Strawn zones for the lease. The lower sand was shaled out. The hole was plugged back from 4390 to 4000 feet for nitro shot and acid.

East Texas

Two Deep Tests Planned For Opelika in Henderson

Two deep tests have been authorized for the Opelika pool, Henderson County, by Lone Star Gasoline Company and Shamrock Oil & Gas Corporation. The partnership has projected a drilling program to develop adequate gas reserves to support a large gas recycling plant that was obligated as part of the purchase price in acquiring acreage and two gas-distillate producers and a small oil well from Tidewater Associated Oil Company, Seaboard Oil Corporation and Humble Oil & Refining Company last February.

Contracts have been awarded to Delta Drilling Company for the immediate drilling of J. H. Lewis 1, half mile northwest of the discovery and Wesley Cox's Peacock 1, situated on a 95-acre tract, S. Hatton Survey, and ¾-mile east of the oil well. Lone Star Gas Company is building a 12-inch gas line from the field to market a portion of the processed gas and the remainder will be returned to the Lower Glen Rose saturation.

Production test is to be made in the near future by Harry Moss and Delta Drilling Company's Venters 1, Camp County wildcat that is credited with having logged about 50 feet of saturation near the Pettit-Travis peak contact in drilling to 8087 feet last March. Operations were suspended after cementing 5½-inch pipe 2 feet off bottom, to cure titles. Pipe will be perforated opposite porous sand below 7947 feet.

Sun Oil Company's Sanders 1, ¾-mile south of gas distillate production in the Chapel Hill field, is showing for the third oil strike from the Pettit zone in flowing 23 barrels of 52-gravity oil in 12 hours through 3/16-inch choke. Production followed treatment of thin pay section with 2000 gallons of acid at 3250 pounds pressure through perforations at 7999-8108 feet. The hole was plugged back from Travis Peak at 8165-8201 feet.

The Texas Company's Cherokee Development Company 1, Cherokee County wildcat, 4 miles east of Rusk, abandoned in Woodbine water sand at 4904-5114 feet.

East Texas Pressure Up

Texas Railroad Commission reports from the East Texas field show that the average bottom-hole pressure rose 4.53 pounds between June 8 and July 8, resulting in an average pressure of 1064.14 pounds for the field as a whole. This is the second pressure increase reported in as many months.

Southwest Texas

Wade City West Side Well Assures More Drilling There

Scattered wildcat locations, field expansions and offsetting programs gave the past week's drilling activity in the South Texas Gulf Coast a slight boost over the preceding week. The work would indicate a continuance of at least the present program during the remainder of the summer.

Henderson Coquat's Lagging 1, 3350-foot southwest outpost to the Wade City field, Jim Wells County, was ready for completion in the Bierstadt sand at 4787-95 feet after a drill-stem test recovered 690 feet of oil, 10 feet of mud and 500 pounds pressure through ¼- and ⅜-inch chokes in 18 minutes. The test is west of the other wells in the field and should bring drilling of 25 or more operations this year.

In the same county, 1511 feet southeast of the discovery of the Gallagher field, M. M. Miller & Son's Gallagher 1, Block 21, is completing in a sand section at 5744-61 feet. The test previously showed gas and oil in the discovery zone at 5219-23 feet. A new sand in the Vicksburg cored gas at 5744-56 feet and oil at 5756-61 feet. The hole is bottomed at 6200 feet with pipe landed to 5803 feet. Perforations were made in the lower part of the sand. If a producer, it will be the second in the field.

Southern Minerals Corporation found the new sand on the east side of the Stratton field, Nueces County, at 6384-6410 feet in Bertram 2, where it indicated a producer. It picked up another sand at 6577-90 feet and a drill-stem test recovered 240 feet of oil, no water and 400 pounds pressure in 7 minutes. At last reports, it was drilling below 6650 feet. The Bertram 1 uncovered oil in the 6400-foot level to establish the first production of that type on the structure. The second well is one location south. Conroe Drilling Company's Sellers 1, north offset to the discovery, found the pay at 6367-87 feet and casing was set on bottom.

A potential test on Skelly Oil Company's State 1, discovery of the Baffins Bay field in southern Kleberg County, indicates that this will be an important area. The well, in Tract 385, found the sand at 7390-7402 feet, drilled to 9428 feet and was perforated at 7394-98 feet, where it flowed at the rate of 136.12 barrels of 39.3-gravity oil per day. The flow was through ¼-inch choke with pressure 1225 pounds and gas/oil ratio 8676 to 1. The test showed a cut of .3 percent basic sediment and water.

Norsworthy Production Company's Fagan 2, 2850 feet south of Fagan 1, and a west outpost to the Fagan field of Refugio County, perforated at 5308-5312 feet and flowed pipe line oil to open a new sand for the area. The flow was hampered when salt water broke in due to a faulty cement job and the hole was squeezed. A new production test was under way at the close of the week.

Coronado Corporation was running a potential test in Welder 1, discovery of a new pool 6 miles south of Seadrift in Calhoun County. Perforations had been made at 5658-59 feet after the well was plugged back from 10,002 feet. No gauge was available, but the test was flowing through ⅛-inch choke under 2025 pounds tubing and 2350 pounds casing pressures. Sand, apparently in the Catahoula, was found at 5630-70 feet. A southwest offset has been commenced.

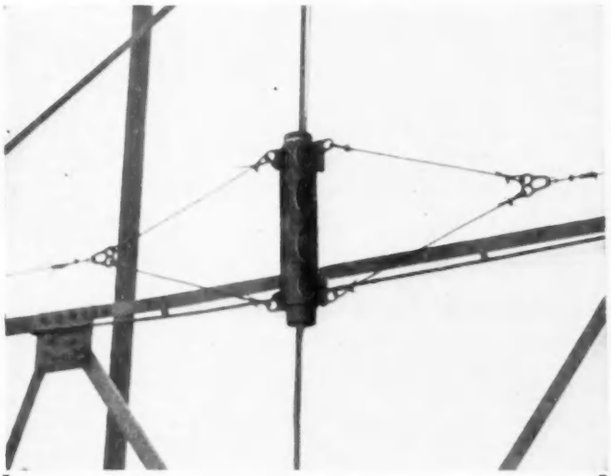
In Jackson County, much activity centers around the Lolita 5900-foot Frio sand area. Three more wells were completed during the week, thus attracting an increased offsetting program.

Second Colorado County Well Producing Oil from Wilcox

Extended 2587 feet west by a second producer, Sheridan in Colorado County becomes the first Wilcox-sand oil field on the South Texas Gulf Coast to give signs of importance. No definite gauge is available, but Shell Oil Company's Goodrich 1 is rated upward of 600 barrels of pipe-line oil per day through ¼-inch choke with a nominal gas volume.

The wildcat, located 466 feet out of the southeast corner of the Heller survey No. 6, cored the oil sand at 8127-45 feet and pipe was landed at 8133 feet.

It checked with the initial test and



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is showing for a producer of similar proportions. This would indicate that the company will continue its drilling program. Several operators hold acreage on the flank of the structure.

Atlantic Refining Company staked W. E. Conwell 1, one mile northeast of the Thomaston pool discovery in DeWitt County and will drill to 8500 feet to test the Wilcox zone. Pearl Conwell 1, discovery of the pool's first Wilcox production, is producing distillate from a 7800-foot sand.

Continental Oil Company has set surface casing in its well in the Lucas area, Live Oak County, while Tidewater Associated Oil Company's deep operation at Bruni in Webb County is drilling below 8200 feet.

Speed Pettus-Yegua Drilling In Mirando District

Expansion of the Pettus-Yegua play through the Mirando district of South Texas seems more certain as new production is being obtained. The latest is a new pool northwest of Randado in Jim Hogg County. Already this month, two fields in the Pettus zone have been proved in Duval County. Last month, Jim Hogg County opened an oil area in the same pay to add to the expanding development in the Colorado area of southwestern Jim Hogg County.

Patal Drillers, Inc., and C. B. Peters, Inc.'s, D. Gutierrez 1 is shut in as a gas well at 3156 feet after showing a large volume from perforations at 3124-27 feet. Pressure built up to 1075 pounds while flowing through ⅜-inch choke. The test cored the Pettus sand at 2837½-48½ feet and showed gas and oil-cut mud. It encountered a Yegua gas sand at 3120-30 feet, the latter receiving the first production test. Another test is scheduled in the 2800-foot zone.

The wildcat, first of a two-test program, is located 467 feet out of the southeast corner of Block 51, Section 579, and 5 miles northwest of Randado.

In the same county, Colorado field continues to be widened by 3000-foot production in the Pettus zone. The Manila field, west of the old Randado area, has a second producer in the Pettus sand in the making as Navarro Oil Company is coring for that sand.

On the basis of showings encountered in the first well, Forest Development Corporation plans an expanded program on its properties 1½ miles southwest of the Fitzsimmons field in Duval County. Rogers 1, Section 275, flowed 26 barrels of 43.6-gravity crude per day through ⅛-inch choke under 275 pounds tubing and 500 pounds casing pressure after perforations were made at 4304-5½ feet. The well is showing a high gas/oil ratio. The company bought the 80-acre lease immediately offsetting the well to the south and plans more wells.

Two miles southwest, Bridwell Oil Company is drilling Rogers 1-B, a northwest offset to the discovery of the Bridwell field. The company also has a northeast offset to the initial well.

Glen field, most active of the newer areas of the Mirando district, has 18 locations and 6 drilling wells. These follow several completions which have added several hundred acres to the proven sector of the pool.

Texas Gulf Coast

Extensions Given Ace, Old Ocean and Markham

Sun Oil Company extended Wilcox production at Ace, Polk County, 2000 feet southwest, completing Kirby-West 2, Sublett Survey, for 170 barrels daily through ⅛-inch choke. Gulf Oil Corporation completed Mays 1 for 370 barrels of oil daily through ¼-inch choke from 5609 feet to extend Frio production at Old Ocean, Brazoria County, to the north. Sisk 1, Thomar Oil Company semi-wildcat on the north flank of Markham dome, Matagorda County, was completed as a gas well at 3160-75 feet to establish an extension. The producing zone swabbed considerable oil, but the well could not be made to flow.

Glen McCarthy will not test Munson 1, wildcat in the Samuel Carter Survey, Brazoria County, Bailey's Prairie prospect, for several days. Trouble was experienced in getting a squeeze job above and below a promising sand near the bottom of the 11,860-foot hole. As the deepest hole ever drilled in the upper Texas Gulf coast, and possibly the deepest producer in Texas, the test has attracted much attention.

Hubbard 1, Rowan & Nichols discovery for Rowan field, Brazoria County, was turned into the pipe line as the Texas Railroad Commission ordered 20-acre spacing for the field. Rowan & Nichols are reportedly preparing to drill another well southwest of the discovery. Geophysical activity in Brazoria County continues on an extensive scale. Humble Oil & Refining Company is shooting the S. F. Austin Survey, Abstract 108, on the Rattlesnake Mound prospect where Amerada Petroleum Corporation drilled 5700- and 7007-foot dry holes, both encountering heaving shale. This company has a seismograph crew southeast of the town of Algoa, Stanolind Oil & Gas Company has a crew in the William Roberts Survey, west of Angleton, The Pure Oil Company is shooting in White Survey 27, south of Pledger, and Phillips Petroleum Company has a crew in the Chocolate Bayou field.

Lissie Prospect Test Taken Over

In Wharton County, Gulfboard Oil Corporation has taken over Poole 1, wildcat on the Lissie prospect, GH&H Survey, drilled recently to 10,116 feet and abandoned by Strake Petroleum Corporation. The company will test several sands in the Yegua and Cook Mountain formations, encountered around 6200 and 7200 feet. The Strake well was drilled into salt water at bottom, plugged to 9925 feet, and perforated at 9939-56 feet for a test which recovered gas and oil. This zone produced by heads but drowned. Tests at 9927-50 and 9860-90 feet showed gas, oil and salt water. The prospect, found in 1934 by Sun Oil Company with torsion balance, is the site of five tests, one of which, Strake Petroleum Corporation's Strunk 1, cored oil sands at 6742 and 6918 feet. H. E. Williams Montex 1, wildcat in the Clare area, was preparing to spud.

At Red Fish Reef in Galveston Bay, Humble Oil & Refining Company was cutting and pulling liner and screen to clean hole in State 1-A-247, wildcat 10 miles southeast of the Cedar Point field, Chambers County. Tests at 8821-25 feet recovered salt water.

The Texas Company chalked up another failure for the Sugar Valley prospect, Matagorda County, quitting Taylor 2, Freeman George Survey, at 9933 feet with no shows reported. This prospect, 4 miles east of Van Vleck, is the site of three dry holes deeper than 9000 feet. G. F. Steger abandoned Trahan 1, wildcat 4 miles southeast of Humble, Harris County, Ruhl Survey, Abstract 657, at 1100 feet, after mechanical difficulties could not be overcome.

Louisiana Gulf Coast

White Lake and Petit Chenier New 10,000-Foot Fields

White Heirs 1, first test drilled in Louisiana by Union Oil Company of California, found oil on the White Lake prospect, Vermilion Parish, flowing an estimated 230 barrels of 32-gravity oil daily from perforations at 10,536-542 feet through ¼-inch choke. Tubing pressure was 3000 pounds, gas/oil ratio 7000/1. The test, in Section 17-15s-1e, was taken over from Louisiana Land & Exploration Company at 8900 feet for a reported consideration of $400,000 in oil payments and a 1/16 royalty override, and drilled to 11,098 feet. On electric log, the production zone registered strong kicks, later confirmed by drill-stem test recovering 4700 feet of oil in 45 minutes. On initial gauge, the sand yielded 9 barrels hourly, with tubing pressure 2000 pounds, gas/oil ratio 850/1. Tanks and separator have been erected.

The prospect was discovered in 1929 by seismograph used by LL&E Company, which drilled two wells in the township, one abandoned at 11,033 feet, the other junked at 8900 feet. Shell Petroleum Corporation drilled a 7600-foot failure. This company, and Humble Oil & Refining Company, are leaseholders in the area, while LL&E company has the right of joint operatorship of the second well for forfeiture of oil payments on White Heirs 1. This strike is the ninth for 1940 in Coastal Louisiana, ignoring the temporary successes at Hayes, Vermilion Parish, and Belle Chasse, Plaquemines Parish.

Phillips Petroleum Corporation brought in Miami Development Corporation 1, Section 11-14s-6w, Cameron Parish, for an estimated 150 barrels of 48-gravity distillate and a large volume of gas through 9/64-inch choke from perforations at 10,194-200 feet. Tanks, separator and heating units were installed while the well was being tested.

Union Oil Company of California opened White Lake, Vermilion Parish, coastal Louisiana's ninth field for 1940, as White Heirs 1 guaged 230 barrels of 32-gravity oil daily through 1/4-inch choke from perforations at 10,536-542 feet. In Cameron Parish, 34 miles northwest, Phillips Petroleum Company converted the Petit Chenier prospect, Miami Development Corporation 1, making an estimated 150 barrels of 48-gravity distillate through 9/64-inch choke from perforations at 10,194-200 feet, to establish the sector's tenth 1940 field.

At start of gauge, the well made 5 barrels hourly. This test was drilled midway between the Catfish Lake prospect, found by The Pure Oil Company in 1935, and checked with torsion balance and seismograph by Humble Oil & Refining Company, and the apex of the Petit Chenier, or Chenier Ridge prospect, found by Phillips Petroleum Company with seismograph in 1939. It opens Coastal Louisiana's tenth 1940 field. Humble Oil & Refining Company drilled two failures, 7398 and 10,895 feet, in the same township east of the discovery, and dropped leases. Shell Oil Company, Gulf Oil Corporation, and Phillips Petroleum Corporation are the principal leaseholders.

Neale Continues to Look Good

At Neale, Beauregard Parish, outstanding 1940 field, Atlantic Refining Company gauged Musser-Davis 1, 2650 feet northeast of Spiers 1, Section 26-3s-11w, at 250 barrels daily from 8360-8403 feet. The company's Rice Land & Lumber Company 2-B was reported in the sand at a depth conforming with the discovery, Whitmer 1, ¾ mile east, which was perforated at 8356-70 feet. This condition, found in each previous extension, confirms the theory that Neale will have an unusually large surface area, and, if sand conditions are consistent, will be numbered among the most important strikes of the past three years. No test results were available on Rice Land & Lumber Company 2-B. Operators staked Kay 1, Section 23-3s-11w, on a farmout taken from The Texas Company, who retained a quarter interest.

In the LaFourche Crossing field, LaFourche Parish, Hawkins & Grubb completed Thibodeaux 1, north offset to Mikton Oil Company's discovery, for 250 barrels daily from 10,097-112 feet through 3/16-inch choke to redeem the field for disappointing performances in Mikton Oil Company's Martinez 2 and Martinez 3. Sand conditions in this area are poor, with much lateral change.

Importance of Kenilworth production, St. Bernard Parish, was diminished by Vendome Petroleum Company's abandonment of Kenilworth 3, southeast extension, at 11,900 feet. With dry holes on the north and southeast, the sole producer in the field is the discovery, Kenilworth 1, now flowing 200 barrels daily. A similar condition exists at Erath, Vermilion Parish, where The Texas Company's abandonment of Trahan 1 at 11,771 feet marked a southeast limit close to the discovery. Humble Oil & Refining Company had derrick up for Vermilion Parish School Board 1, Section 16-13s-4e, ½ mile west of the discovery.

In Acadia Parish, Vincent & Welsh were still working on McManus 1, Section 21-7s-1w, Richie, or Trilby, prospect discovery that initially flowed 9 barrels daily from 3507-37 feet. Operators acidized and obtained 55 barrels of 28-gravity oil daily with 40 percent water.

Superior Oil Company has not yet opened flank production at Calcasieu Lake Dome, Cameron Parish, as State 3 tested salt water from perforations at 8567-77 and 9485-95 feet. Operators were drilling past 9534 feet. This southwest flank well, fourteenth and deepest ever drilled on this prospect, is the company's third attempt.

May Test Welch Flanks

The old Welch dome, Jefferson Davis Parish, may be scheduled for flank exploration as Humble Oil & Refining Company has taken leases in Section 33-9s-5w. The diverse ownership around the flanks of this dome has made operators reluctant to drill although there is rumor that Union Sulphur Company intends a test.

Barataria field, Jefferson Parish, may be defined on the east as The California Company's Louisiana Truck & Orange Land Company 1 was reported 900 feet below the 8200-foot pay. The edge well is 300 feet east of State 1, a producer, and may have cut a fault of considerable displacement.

Bel Oil & Gas Corporation may extend North Elton field, Allen Parish, 1000 feet southwest. Casing has been set at 7592 feet to test a gas sand at 7570-90 feet. Operators' Bel Estate 1, Section 22-6s-3w, opened the field in June 1939, when it flowed 20 barrels of 55-gravity distillate daily from the Oligocene at 7292 feet.

Union Sulphur Company completed Miller 1, north flank extension in the Woodlawn field of Jefferson Davis Parish, for 50 barrels daily from 9594 feet.

Cockfield production at Eola, Avoyelles Parish, opened by Amerada Petroleum Corporation's Glaze 9, was increased as that operator completed Cerami 5 for 220 barrels daily from 6449 feet.

Two flank tests at Chacahoula dome, LaFourche Parish, failed to produce. Sun Oil Company's Dibbert-Stark-Brown 8, Section 70-15s-15e, failed to flow from 6380-85 feet, and operators were pulling screen and liner. The company's Cypress 2, southwest flank, tested salt water at 7987-8000 feet.

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Horizons on West Sabine Uplift Indicate Oil

Adding impetus to a leasing and drilling campaign which had already assumed considerable proportions in recent weeks on the west side of the Sabine uplift in East Texas, were indications given last week that the basal Glen Rose lime (Pettet) and the Travis Peak horizons in the Waskom field, located partly in Harrison County, Texas, and partly in Caddo Parish, Louisiana, will become productive of oil.

Heretofore, these horizons at Waskom in six wells drilled to these depths have produced only gas, but last week Arkansas-Louisiana Gas Company's Abney C-1, James Shadoin Survey, showed an estimated 60 to 70 barrels of 42-gravity dark green oil daily along with 6,000,000 cubic feet of gas, after perforating with 250 shots between 6000 and 6174 feet. After initial test the well was shut in as no storage had been erected.

The same company made location mile north for Abney D-1, S. Holloway Survey. A number of leases have changed hands at Waskom as a result of oil showing in Abney C-1. North of Jefferson, Marion County, Texas, Henry & Parson's Ralph 1, Usery Survey, which logged an oil show in the Gloyd at 5947-67 feet, was being acidized.

North of this development on the west side of the Sabine uplift, Shell Oil Company was drilling below 5760 feet in Wall 1, John Downey Survey, north of Maud, in Bowie County. To the south, Shell Oil Company and Union Producing Company spudded Garrett 1, William Moody Survey, Shelby County. Across the line in Louisiana and on the south flank of the Sabine uplift, Shell Oil Company was drilling a deep test on a 75,000-acre block, in Sabine Parish, Louisiana.

Humble Oil & Refining Company is leasing actively southeast of Shelbyville, Shelby County, in and around the A. Smith, J. Haley, R. Marshall and S. Holmes Surveys. Northwest of Jefferson, Marion County, in the R. W. Madden and W. C. Ward Surveys, Dean Brothers, Fort Worth, were leasing.

Placid Oil Company has halted cratering at Louisiana Central Lumber Company 19, C NE NW 36-10n-2e, in the Olla field, LaSalle Parish. This field added only one producer last week, Arkansas Fuel Oil Company's S. M. Cruse 1, SW SW 19-10n-3e, good for 220 barrels daily. It is about midway between the discovery well and a recently opened 2-mile south extension.

Ohio Oil Company's G. W. Taylor 15, Account 1, SE 15-23n-8w, deep test in the old shallow Haynesville field, Claiborne Parish, cored at 7661 feet, probably in the lower Marine.

Louisiana Permits

Thirty drilling permits were issued last week by the Louisiana Conservation Commission, of which 8 were in North Louisiana divided among the following parishes: Caddo 5, LaSalle 2, and Webster 1. The 22 in South Louisiana were in the following parishes: Acadia 1, Beauregard 2, Cameron 2, Evangeline 2, Iberia 2, Iberville 1, Jefferson Davis 1, La Fourche 3, St. Mary 1, St. Martin 6, and Vermilion 1.

Cotton Valley Unit Operation Plan Given State Approval

Unit operation of all production below the base of the Travis Peak formation in the Cotton Valley field, Webster Parish, Louisiana, is a part of the program, which now provides for pressure maintenance of the Bodcaw and D sands as well as building a recycling plant for processing as much as 150,000,000 cubic feet of gas from these formations.

Contract for the plant will be signed shortly and it should be in operation within six months. The plant is to cost around $2,000,000.

The unitized block of 12,000 acres came about through agreements between holders of the working interests and owners of royalty interests. Holders of 95 percent of the working interest acreage had signed the agreement last week and owners of 90 percent of the royalty acreage had signed. Signatures of the remaining interests will be added within a few weeks.

The unitized method of operation has been approved by the minerals division of the Louisiana Department of Conservation, which issued a supplement to Order 10, which had been in force since July 24, 1937. This supplemental order provides:

"That any operator or operators in the Cotton Valley field are permitted to inject gas produced therefrom, either before or after it has been processed, into the formations below the base of the Travis Peak formation," also:

"In addition to the total daily field gas allowable provided for in order Number 10, there may be lawfully produced all gas, which, less that amount thereof as it utilized or unavoidably lost in recycling operations and the extraction of distillate, gasoline or other liquid hydrocarbons, is necessary for the accomplishment of pressure maintenance as is hereinafter authorized by this order, and is returned to any formation below the base of the Travis Peak, and all such distillate, gasoline or other liquid hydrocarbons obtained from such gas before return to the formation shall be lawfully produced, subject to all subsequent orders of the commission."

In effect the operation of the distillate producing formations of the field have been given to the management of the Cotton Valley Operators Committee, whose membership is composed of a representative of each concern and individual having working interest in the production of the two formations. This committee will set up management methods for operation of the project. W. W. Fleming, Ohio Oil Company, Tulsa, is chairman of the committee and J. P. D'Artois, Ohio Oil Company, Shreveport, is secretary.

Rodessa Cumulative Output 109 Million Barrels in 5 Years

The Rodessa field, which was five years old July 7, has a cumulative oil production since discovery to June 1, 1940, of 109,176,306 barrels from 1050 wells.

Cumulative production by states: Louisiana, 452 wells, 63,721,879 barrels; Arkansas, 90 wells, 5,162,810 barrels; Texas, 508 wells, Cass County, 31,707,256 barrels, and Marion County, 8,574,361 barrels.

Rodessa had produced gas before oil was discovered there in 1935. Discovery of oil started an exploration campaign in North Louisiana, East Texas, and South Arkansas that has resulted in discovery of a number of Lower Marine and Smackover lime oil, gas and gas/distillate fields.

Arkansas

Deep Smackover Shows Salt Water on Drill-Stem Test

Smackover lime deep geophysical prospect in South Arkansas ended in failure last week when Barnsdall Oil Company abandoned El Dorado and Wesson 1 (McLendon fee), C NW SW 5-19-18, Columbia County, after the test showed salt water in the deep lime at 8760 feet. On a drill-stem test it showed 36 stands of salt water.

Only remaining deep geophysical wildcat prospect drilling in South Arkansas was Standard Oil Company of Louisiana's Zimmerman 1, SE SE 29-18-16, Union County, which after drilling to 8020 feet plugged back to test previous shows in the lower Marine. Operators reamed down for a drill-stem test after missing one at 7297 feet when packer failed to hold.

Standard Oil Company of Louisiana's W. P. Sturgis 2, NE SW 1-17-27, Miller County, offsetting the discovery at Fouke, after drilling to 4081 feet, plugged back and was swabbing a showing of oil after perforating casing at 3654-60 feet. Hassie Hunt abandoned location for a test in Section 36-16-27.

G. Scott Hammond secured 80 acres in the Buckner field, Columbia County, on a farmout from Standard Oil Company of Louisiana and made location for Crone 1, C SE SW 9-22-16. The Dorcheat field recorded its first failure. There are now only three drilling operations in Columbia County.

Arkansas Permits

Five drilling permits were issued last week by the Arkansas Oil & Gas Commission, as follows: Columbia County —Placid Oil Company's Booth B-2, C SW SW 20-17-19; McAlester Fuel Oil Company's K. J. Sayers 1, C NW NE 15-18-22; Sebastian County — Ozark Natural Gas Company's A. B. Harper 1, NEc NW 21-8-29; Union County— Marine Oil Company's W. B. Thompson A-13, NW SW SE 3-18-13, and W. B. Thompson A-12, NW SW SE 3-18-13.

Mississippi

Yazoo Holds Wildcat Interest; To Pump at Tinsley Dome

Although wildcatting continues over a large part of Mississippi, recent discovery of the Eutaw (Blossom) as a third oil horizon in the Tinsley Dome field has increased wildcat interest in Yazoo County, where the state's only two oil fields are located. Of 7 new wildcat locations announced last week, 3 were in Yazoo County. Others are contemplated immediately.

Evidence of the play northwest of Tinsley Dome was a wildcat location made by F. E. Smith et al for School Board 1, SW SE 16-11n-3w. Northeast of Yazoo City, Edward DeLoach et al located W. W. Wilburn 1, SE SE 9-12n-1w. Twenty miles northeast of Tinsley Dome and 8 miles northwest of the Pickens field, also in Yazoo County, Tcheva Oil Company will make location soon in Section 26-12n-1e. Northwest of this block, B. B. Jones is planning a test in Section 25-13n-1w, 3 miles south of the Holmes County line. Frederick L. Mellen has assembled a block around Section 15-12n-1e, and east of this block, Hassie Hunt plans a wildcat on a block around Section 33-13n-2e.

Five wells in the Tinsley Dome field are scheduled for immediate installation of lifting units, all being operations of Union Producing Company which discovered the field last August. One of the four wells in the Pickens field will be placed on the beam. Exchange Oil Company, discoverer of this field, made two new locations there, one ½-mile and the other ¼-mile from production. Oil from the producers owned by this company is being sent to its refinery at Whiting, Illinois.

Two new wildcat locations were made in Attla County, one in Grenada County and one in Montgomery County.

There are still 65 geophysical units in Mississippi, of which 35 are in the southern half of the state. The Mississippi State Lease Commission will meet at Jackson July 23 to consider bids for leasing of state-owned land.

Alabama Leasing Activity

Leasing activity in Alabama continues to gain momentum, with five active operations in the state, four of which were drilling.

In Franklin County, Alabama, H. D. Easton, of Shreveport, has assigned 25,300 acres to C. J. Brown, Shreveport, for a test to be drilled this summer. The acreage is located in 8s-10w, 8s-11w and 8s-12w, on the Liberty Hill Structure.

J. A. Wainwright, Farmerville, Louisiana, was leasing in 11s-4w, Cullman County, just south of a block held by H. D. Easton, Jr., Amory, Mississippi, and east of a large block held by Seaboard Oil Company. D. Forehand was leasing east and southeast of Jackson, Clarke County, Alabama, and E. A. Vaughey, Houston, continues to lease in this county.

J. Brian Eby has placed on record 86,000 acres of leases in Baldwin County, Alabama, and recordings have also recently been made in the same county of 30,000 acres for Sun Oil Company. In this county, Humble Oil & Refining Company has 30,000 acres and Gulf Refining Company slightly more than that amount.

A total of 17,800 acres of Mobile County public school land has been leased recently to Humble Oil & Refining Company for 10 years. The company has large holdings in Mobile and Washington counties, and plans an extensive geological survey of its acreage.

Fohs Oil Company's Bond Lumber Company 1, Section 17-1s-11w, Perry County wildcat on the Maxie structure, was drilling below 5000 feet. While being drilled tight, it is known that the Vicksburg and Cane River horizons were topped high, and that oil shows were found in the upper Wilcox. While the test will be carried deeper, it is probable that pipe will be set soon to test the Wilcox.

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Rocky Mountain States

LaBarge Outpost Nearing Sand With Outlook Promising

Considerable attention has been focussed on an outpost ⅜-mile east of production in the LaBarge field, Sublette County, Western Wyoming, which was on test. Worth Garretson's 1, NE NW SE 28-27n-113w, made 5 barrels a day from the upper sand at 1421 feet, and was being deepened below 1460 feet to test the second producing sand of the field.

In the old Cumberland producing area, Uinta County, in the extreme southwestern corner of Wyoming, Elynor Oil Company's Government 1, E SE SE 6-18n-116w, encountered good oil showings in the shallow sands at 485 feet and was running tubing for a production test.

Latest well to drill to the deep Tensleep oil sands of the Wertz field, Carbon County, Southeastern Wyoming, Sinclair-Wyoming Oil Company's Wertz-Unit 14, NW SW NE 7-26n-89w, logged top of the objective formation at 5740 feet, set the 7-inch production string at 5742 feet, and was drilling in to test. The field, in addition to the Pennsylvanian oil sands, produces gas from Sundance and Dakota formations.

One of the best completions of 1940 for the Rocky Mountain area was indicated by Argo Oil Corporation's Elliott 13-A, CSE NE NW 5-35n-65w, inside location in the Lance Creek field, Niobrara County, Eastern Wyoming, which a week ago tested 60 barrels an hour from the upper Leo formations, deepened to 5490 feet in the lower sands of the series and showed for 55 barrels hourly from the second and third Leo horizons. It will be given a complete test of the three sands simultaneously before completing.

Montana Deep Test

Deep test well in the Dry Creek field, Carbon County, Southern Montana, The Ohio Oil Company's Margaret Souders 9, CSE SE 2-7s-21e, was being plugged back to complete as a gasser in the Frontier formations at 4116-4210 feet. It was carried to 5511 feet to test the Sundance, but encountered water and plugged back to the upper level.

Gas horizons of the Cedar Creek field, Fallon County, Eastern Montana, were encountered at 995 feet in Montana-Dakota Utilities Company's 143, SE NW NE 4-6n-60e, and operators were drilling in to test. Production string was cemented above the gas level at 901 feet.

Wildcatting activity in Montana received another boost when Montana-Dakota Utilities Company started drilling on Churchill 1, CSW, NE 19-33n-2e, on the Devon structure, Toole County, northern sector of the state.

The Bowdoin gas field, Phillips County, Montana, also had a new location, Montana-Dakota's Government 60, CSW SW 26-33n-32e, which was drilling below 30 feet.

The Texas Company and Continental Oil Company were starting deepening campaigns in their respective holdings in Colorado. The Texas Company's Wicks 2, NW SW NW 10-4n-91w, in the Hiawatha (Moffat) field, Moffat County, is to be drilled from 3935 feet to recomplete in lower sands. In the Ft. Collins field, Larimer County, Northern Colorado, Continental Oil Company was cleaning out Larson 2, CNE SW 19-8n-68w, at 4495 feet preparatory to deepening from 4520 feet. This is the second old well in the field to be deepened this year by the company.

California

Touted Fresno County Test Shows Unfavorably; Shut In

Jergins Oil Company's wildcat in Section 29-14-13, Fresno County, was reported standing idle and may be shut in to build up pressure. It had previously been reported flowing oil in commercial quantities, but it is now believed that all oil recovered was that used as drilling fluid.

Republic Petroleum Company topped the Vaqueros at 3512 feet in Hollister 1, wildcat in Section 36-5-33, Gaviota area, Santa Barbara County. An 18-foot core to 3530 feet showed gray sand. A routine formation test will be made of the showing before drilling is resumed.

In the Trico area of Tulare County, Tide Water Associated Oil Company was coring in siltstone at 10,645 feet in Daniels 35, wildcat in Section 22-23-23, with lower Vedder as objective. In Lompoc-Santa Rita Hills area, Santa Barbara County, the company's Sousa 1, wildcat in Section 12-6-33, was coring hard gray basalt at 305 feet and may be suspended.

Union Oil Company's Sansinena 12, wildcat in the La Habra district of Orange County, Section 31-2-10, originally bottomed at 5157 feet, has been redrilled with new hole to 5360 feet in fractured shale, showing free oil in the fractures. Drilling was interrupted for repair of electrical equipment. In the northwest Dominguez outpost area of Los Angeles County, the company's Austin 3, bottomed at 7540 feet with water shut-off at 7043 feet, on formation test flowed at the rate of 140 barrels daily, 30-gravity oil, and was being completed.

Superior Oil Company's Brandt 1, South Greeley district wildcat in Section 28-29-26, Kern County, was coring below 11,654 feet in shale, with Vedder as the objective.

Thorley Oil Company cored top of the O'Dea at 7920 feet in Athens 1-12, wildcat southeast of 124 and Hoover Streets in the Athens-Rosecrans district of Los Angeles County, and has bottomed at 8010 feet. Water string is being cemented at 7945 feet for a production test. Location is in a town-lot area, and successful completion would bring extensive offset drilling.

Preparations were being made by A. J. Borget to redrill and deepen the old Dilamar Oil Company's Quinn 3, wildcat in the Richgrove area of Kern County, Section 15-25-27. Original operator carried the test to 2902 feet and encountered streaks of sand showing fair oil cuts in the Walker sand, topped at 2864 feet.

Michigan

Bay County Wildcat to Be Carried to Trenton Lime

A deep well to test the Trenton lime and possibly the St. Peters sand will be started this summer by Gulf Refining Company in Bay County, in the basin province. Drilling equipment to handle from 7000 to 10,000 feet of hole will be used. The projected deep test may prove the most important development for 1940 in Michigan. To date, the basin province has not been tested below the Sylvania sand of Devonian time, and at the base section of the Detroit River dolomite.

Total projected depth of the test is uncertain due to the almost complete absence of data in the basin province of the thickness of the Niagaran salt section. It may prove to be 2000 to 3000 feet thick. A test drilled in 1936 by C. W. Teater, Alpena County, Section 18-32n-6e, had 2100 feet of Niagaran salt. Teater's location was 100 miles north of the Gulf Refining Company location and farther out of the basin. Teater topped Trenton at 5145 feet and St. Peters at 5651 feet.

To make the deep test, the company will deepen Bateson 1, Section 2-14n-4e, Bay County, originally completed in 1939 for a pumper from Monroe lime at a plug-back depth of 3817 feet. Originally it was carried to 4454 feet, topping Sylvania at 3945 feet. Contract for deep test has been awarded to Parker Drilling Company, Tulsa, which company drilled Bateson 1 to its present depth with cable tools and also holds the state depth record for rotary, established in 1938 in the Temple field for the Gulf Refining Company with a 3919-foot hole. It was the first, and only well to date, to drill to the Monroe section with rotary.

The projected deep test will be drilled with rotary. The original hole was carried to 3800 feet with enough hole for setting 8¼-inch casing at that depth. Gulf Refining Company controls several thousand acres in the Kawkawlin block, site of the deep well location.

Carter Lease, Inc., Fee 6, Section 18-13n-1w, first deep test in the Porter field, Midland County, was shut down for orders at 4671 feet after failing to log Sylvania sand saturation. Top of sand was logged at 4583 feet.

C. W. Teater's Domokos 9, C SW SW 11-18n-1w, first 5-spot location for the old Buckeye field, originally developed on a 10-acre pattern, surprised some when it recovered 106 barrels in 16 hours on pump test after acid. Original wells on the 40-acre lease flowed from 1200 to 3600 barrels per day initially before acid. Whether the 5-spot added anything material to the question of drainage appeared to wait on production reports over a pay-out period. Bottom is at 3636 feet.

Another of Michigan's 1940 discoveries was crossed from the record when Keyson Oil Company abandoned Steele 1, Section 32-2n-11w, Allegan County wildcat, completed in June for 8 barrels a day at 1610 feet from Traverse lime. It was deepened, and when later plugged back efforts to get it back on production failed.

UNITED STATES WELL COMPLETIONS

Arkansas

Columbia County (Dorcheat)—
Mid-Continent Pet. Co., Keith 1, 16-18-22 ..... • 8913
Columbia County (Magnolia)—
Standard Oil of La., Longino B-3, 19-17-19 ..... 220 7585
Columbia County (Wildcat)—
Barnsdall Oil Co., El Dorado & Wesson (McLendon) 1, 5-19-18 .. • 8760
Union County (Rainbow City-Nick Springs)
J. H. Coker & J. P. Grieves, Smith 1, 32-17-14 ..... • 3541

California

Fresno County (East Coalinga Eocene)—
Texas Co., Exeter 5 .....1533 8150
Fresno County (Northeast Coalinga Area)—
Amerada, S. P. L. 38-9..... • 8758
Fresno County (Coalinga Shallow Area)—
Shell No. 45-2 ..... 37 3745
Kern County (Belridge)—
Belridge Oil Co. No. 3-35.....1033 8400
Continental, Result 4 ..... 756 8294
Kern County (Cole's Levee)—
Richfield, KCL-A 38-29.....1834 9000
KCL-A 78-30 ..... 904 9066
Standard, KCL 20-6 ..... 289 9502
Kern County (Fruitvale)—
H. L. Whiston, Mesa-Dixon 1..... 65 3614
Kern County (Kern River)—
Hast Oil Co., Kern 9..... 5 627
Kern County (Shale Hills Area)—
General, Twisselman No. 1..... • 2463
Kern County (Ten Sections)—
Shell, KCL A-21-30.....1734 8190
Los Angeles County (Aliso Canyon)—
Tide Water, Porter 22 ..... 120 5126
Los Angeles County (Montebello West)—
Kern Oil Co., Monterey 42..... 396 7870
Los Angeles County (Rosecrans-Athens)—
Thos. Kelly & Sons, McMillen Comm. 3 .....1900 7821
Los Angeles County (Wilmington)—
Barnhart-Morrow Cons., Wilmington Comm. 3..... 375 3720
Dumm Bros. Pet. Corp., No. 7.... 350 3728
General, Blinn 9..... 95 3358
Raleigh Oil Co., Patten 1..... 160 3647
Orange County (East Coyote)—
Master Pet. Co., Mathis 1..... 420 4253
San Mateo County (Half Moon Bay Area)—
Wilshire Oil Co., Cowell 3..... • 1954
Santa Barbara County (Santa Maria Valley)—
Navy Oil Co., O'Donnell 1..... 300 5698
Tulare County (Trico Area)—
Trico O. & G. Co., Fee 1..... ¶30 2502
Ventura County (Rincon)—
C. C. M. O. Oil Co., Hobson B-32 340 4005

Colorado

Rio Blanco County (Wilson Creek)—
Texas Co.-California Co., Unit 3, ne ne ne 27-3n-94w ..... • 6333

Illinois

Clay County—
Schulman Bros., Colclasure 1, cw½ se ne 10-3n-7e ..... • 2942
Clinton—
Brookside O&G, C. B. & Q. RR 3-D, se se sw ne 1-1n-1w.....1032 2901
Gulf, Adams-Felton 3, ne ne nw 1-1n-1w 669 2901
Ellerman et al 1, cw½ se sw 36-2n-1w 2006 2927
H. Simms, Dunn 2, cw½ ne ne 1-1n-1w 703 2900
F. A. Hass, Allison 1, ne se ne 12-1n-1w 183 2930
T. W. Lee, Allison 2, sw se se ne 12-1n-1w 183 2922
Hoffman 2, c nw ne ne 35-2n-1w • 2928
Keister 2, nw se ne 35-2n-1w....2640 2911
Yagers & Brown, Staffers 1, nw nw ne 1-1n-2w ..... • 1370
Max Pray et al, Knolhoff 4, sw se se sw 2-1n-2w 90 1323
Schiermann et al, Huelsmann 1, se c ne ne 20-1n-3w ..... • 1267
Magnolia, Wollenweber 1, sw c sw 25-2n-1w ..... • 2950
Adams, Copple 18-D, ce½ se nw 35-2n-1w 3018 2911
Copple 20-D, ce½ ne sw 35-2n-1w 5320 ....
Keister 4-D, s½ ne 35-2n-1w....5275 2914
Keister 5-D, ce½ se ne 35-2n-1w 3260 ....
Thompson Dr., Lippert 2, cne ne ne 35-2n-1w ..... • 2945
Tuesday Oil Co., Buehler 6, ce½ sw sw 36-2n-1w 1845 2913
DeKalb Synd., Hankle 1, ne se ne 13-2n-2w ..... • 1385
Eagleston, Wilkin 1, nw sw se 10-2n-3w ..... • 2594
Southern Pet. et al, Deters 1, sw sw ne 11-2n-3w ..... • 2705
Coles County—
East Oakland Synd., Temple 1, sw sw se ne 36-14n-10e..... 5 2290
Edwards County—
Jarvis Bros., Wicke 1-A, ne sw ne 24-2s-10e 222 3109
Superior, Green 1, nw ne sw 19-2s-11e ..... • 5185
Fayette County—
Sol Simon, Wollin 1, nw sw sw 19-5n-3e ..... • 1820
Texas, Neathery 6, nw sw ne 6-6n-3e 154 1554
Whisenant et al, Lilly 23, nw nw se 16-8n-3e 1000 1516
Babcock, Rhodes 3, nw se se 27-8n-3e 35 1611
Rhodes 4, nw ne ne se 27-8n-3e 38 1588
Rhodes 5, se ne se 27-8n-3e..... 45 1579
Carter, Durbin 25, sw sw sw 4-7n-3e 114 1574
Durbin 4, se nw ne 8-7n-3e..... 690 1589
Durbin 27, ne ne ne 8-7n-3e..... 48 1569
Shelton 4, nw nw nw 9-7n-3e... 150 1573
Kimbrell 2, nw nw nw 17-7n-3e.. 336 1558
Wright 11, sw ne se 20-8n-3e.... 174 1585
Taylor 4, se nw sw 33-8n-3e..... 636 1590
Watson 7, sw ne sw 33-8n-3e.... 336 1586
Watson 8, nw se sw 33-8n-3e... 474 1588
Hamilton County—
Kingwood, Waring 1, ne nw ne 14-6s-6e ..... • 3358
Shell, Beagle 2, ne sw se 6-6s-7e.. 290 2704
Pure, Cuppy 2, se ne sw 6-6s-7e.. 65 2690
Cuppy 3, ne se sw 6-6s-7e..... 287 2755
Jasper County—
Pure, Redman 1, ce½ nw nw 16-5n-10e 108 4584
Dickerson 1, ce½ se nw 17-5n-10e 1690 2840
Berghower 1, ce½ ne se 16-6n-10e 200 2882
Jefferson County—
Leo Horton, Miller 3, cnw ne se 22-3s-3w 30 1294
Magnolia, Gill Est. 5, se sw nw 26-3s-3w 10 1286

[*Continued on next page*]

Summary of Drilling Operations in the United States, Week Ended July 20, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	4	1	.....	3	220	105	130	5	14	86	133	223
California	24	20	1	3	12,646	740	581	14	44	600	550	1,174
Colorado	1	.....	.....	1	.....	4	12	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Illinois*	98	79	.....	19	58,221	2,186	2,078	114	298	2,480	.....	893
Indiana	‡	.....	.....	.....	.....	225	96	.....	.....	.....	.....	.....
Kansas	36	30	1	5	27,318	1,061	748	36	114	1,101	838	1,583
Kentucky	9	4	1	4	30	175	352	.....	.....	.....	.....	.....
Louisiana	31	23	1	7	5,777	938	567	30	98	936	715	1,449
Michigan	15	5	2	8	376	714	794	20	51	644	741	1,419
Mississippi	5	3	.....	2	1,140	115	6	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....
Montana	4	4	.....	.....	406	101	70	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	5	4	.....	1	529	404	352	8	23	362	.....	293
New York†	23	23	.....	.....	48	591	290	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	8	4	2	2	69	478	496	.....	.....	.....	.....	.....
Oklahoma	32	12	2	18	2,910	1,223	1,166	24	90	1,033	1,155	2,059
Pennsylvania†	43	41	1	1	64	1,420	812	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Texas	174	133	3	38	79,762	5,871	5,533	238	473	6,649	6,059	10,269
Utah	1	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....
West Virginia	6	1	4	1	3	298	274	.....	104	294	351	718
Wyoming	3	2	.....	1	628	74	69	.....	.....	1	.....	.....
Total this week	522	389	19	114	190,147	16,739	14,426	489	1,309	14,186	10,542	20,075
Total last week	578	436	26	115	236,769	16,217	13,797	415	820	13,697	10,125	20,075
Total this year	16,739	12,294	877	3,568	6,479,667	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.
‡ Indiana not available for week ending, July 20, 1940.

United States Well Completions—*Continued*

ILLINOIS—*Continued*

Marion County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Texas, Centralia 52, sw ne nw nw 4-1n-2e	1000	3506
Centralia 53, ne nw nw nw 4-1n-2e	910	3500
Reed 8, se nw ne nw 5-1n-2e	713	3374
Small 13, nw ne nw ne 5-1n-2e	880	3450
Canull 19, ne sw ne ne 6-1n-2e	800	3378
Canull 20, se ne ne ne 6-1n-2e	525	3380
Sweney 11, ne ne nw 20-2n-2e	298	3485
Sweney 11, sw sw nw 20-2n-2e	30	2100
Kleinschmidt 15, nw nw ne 28-2n-2e	961	3522
Stroup 24, nec se sw 30-2n-2e	984	3465
Stroup 26, nw sw se 30-2n-2e	740	3445
Stroup 27, nwc se 30-2n-2e	1497	3535
Stroup 28, ne se sw sw 30-2n-2e	310	3523
McConnoughhay 4, swc se se 32-2n-2e	750	3488
Stonecipher 17, sec sw se 32-2n-2e	92	3482
Williams 22, nw sw sw sw 32-2n-2e	837	3350
W. D. Morgan et al, Foster 1, sw nw sw nw 7-1n-1e	*	2450
Frazier, Phillips 1, nw ne sw nw 7-1n-2e	*	3554
Hensley et al, Fox 1, nec se sw 25-2n-1e	*	3652
Pickard, West 1, ne ne se 35-2n-1e	*	3620
Absher-Booth, Sisson 1-C, sw nw nw nw 3-2n-2e	20	2035
Black Stock, M&I RR 6-C, nw ne nw sw 20-2n-2e	205	3497
Magnolia, Young 115, ne se sw 21-2n-2e	614	3535
Young 116, se se sw	800	3535
Young 37, sw ne sw	960	3522
Young 112, se nw ne nw 28-2n-2e	1182	3510
Young 117, ne ne nw 28-2n-2e	1699	3530
Young 118, se ne nw 28-2n-2e	797	3530
Young 119, nw se nw 28-2n-2e	884	3525
Pugh, Toulme 4, se ne sw sw 30-2n-2e	700	3540
Adams O&G, Wassem 13, sw ne se nw 28-4n-1e	10	1435
Absher & Booth, McMackin 7, nwc sw sw 34-3n-2e	1000	3544

Montgomery County—

Burroughs et al, Kilton 1, ce½ nw se 31-11n-5w	*	944

Wabash County—

L. V. Garnier et al, Putnam 1, ne ne sw 3-1n-13w	200	2720
Big Chief, Harness 1, se sw ne 34-2n-13w	*	2723
Longhorn, Hell 9, sec nw nw 18-3s-13w	140	2499

Wayne County—

Pure, Macklin 1, ce½ nw nw 1-1n-7e	664	3036
Hasselton 1, ce½ se se 29-2n-8e	641	3095
Behymer 1, e½ sw se 32-2n-8e	895	3080
Scholfield 4, cw½ ne sw 33-2n-8e	21	3103
V. Duncan, Inc., Taylor 1, cs½ se ne 33-1s-7e	151	3277
Roche & Voyles, Carlson 5, nec se sw 34-1s-7e	960	3268
Smokey Oil, Hanna 2, sw se se 34-1s-7e	*	3392
Bell O&G, Kern 1, nw nw ne 3-2s-7e	104	3247
New Penn Dev. Co., Pollard 1, nw ne sw 16-3s-9e	175	3381

White County—

J. C. Haines et al, Hon 1, ne se sw 9-4s-14w	289	2240
Pace & German, Hon 3, nw nw se 9-4s-14w	153	2216
Pure, Potter 1, ne nw sw 9-4s-14w	81	2714
Exchange & Ohio, Rudolph 7, nw nw nw 13-6s-9e	188	2282

Kansas

Butler County—

Carlock, Hadley 1, ne ne se 30-26s-7e	*	2805
Blakeslee, Wilson 1, cw½ sw ne 28-27-4e	25	1934

Cowley County—

Murfin, Jarvis 1, cn½ sw ne 19-31-5e	*	3376
Hawkeye, Moon 2, ne sw nw 21-32-5e	2049	3089
Jones, Hunt 1, sw sw ne 16-34-5e	*	3265

Ellis County—

Amerada, Hadley 2, cw½ ne sw 31-11s-17w	1197	3659
Skelly, Kempe "A" 4, cn½ sw ne 12-11-18w, swd	*	3961
Darby, Hadley B-4, cs½ se nw 13-11-18w	3000	3368

Ellsworth County—

Beardmore, Talsky 2, ce½ ne ne 8-16-10w	3000	3257
Magnolia, Zink 3, cs½ ne sw 32-17-10w	1678	3222

Greenwood County—

Ashlock, Lindamood 1, ne nw sw 7-25-13e	12	1620
Lewis & Allan, Gladson 2, sw nw ne 17-28-11	25	1223
Robinson, Haggard 1, se se ne nw	30	1224

Marion County—

Herrington, Deines 1, ne ne ne 29-17-4e	40	2399

McPherson County—

Shawver, Union 6, cw½ nw se 18-17-1w	1877	2654
Central, Swanson BW-2, cs½ sw nw 18-20-5w	57	3359
Ohio, Lindquist 2, ce½ ne se 19-20-5w	1244	3380
Moulton, Briggs 1, cw½ nw sw 20-20-5w	992	3392
Ohio, Peterson 2, ce½ nw sw 29-20-5w	113	3403
Sunray, Lindquist 4, ce½ se nw 29-20-5w	3000	3482

Ness County—

Continental, Shiner 2, ne sw sw se 13-18-26w	712	4453

Pratt County—

Skelly, Moore 4, ce½ se sw 25-27-11w	541	3483

Reno County—

Ohio, VanSickle 4, se ne nw 23-23-4w	10	3428

Rice County—

Mission, Habiger 11, ce½ ne nw 5-18-10w	304	3234
Blake, Schmidt 1, cw½ se se 35-19-8w	8.33	3305
Hopper, Flora 1, cs½ sw sw 26-19-10w	*	3330
Sinclair Prairie, Specht 5, cw½ ne se 20-20-10w	358	3297
Eldorado Ref., Oden 2, cs½ se nw 6-21-7w	302	3338

Rooks County—

Broadview, Livingwood 2-A, cn½ ne nw	535	3261

Russell County—

Hartman & Blair, Surney 4-A, ce½ nw nw 23-14-14w	4	3014
Cities Service, Ebel 3, cs½ sw se 24-14-14w	1315	2928
Stanolind, Rosener 10, cs½ sw se 9-15-13w	933	3350
Wakefield, Meharg 2, nw se se 16-15-13w	152	3337
Cities Service, Tittle 4-A, ce½ ne sw 12-15-14w	*	3341
Shell, Dumler 12, nw nw sw 35-15-14w	3000	3335

Stafford County—

Stanolind, McComb 7, cs½ nw nw 12-24-11w	450	3767
McComb 5, cw½ nw sw 14-24-11w	323	3822

Kentucky

Breckinridge County—

H. E. Morgan, Burton 2	0.21	516

Butler County—

W. Phillips, Hawes 4	5	526
Fitzpatrick & Hays, Ellis 1	*	970

Hopkins County—

S. C. Yingling, Clements 1	*	1148

Ohio County—

O. D. Vickers, Greer 5	10	674
Eureka Oil Co., Davidson 6	*	345
Sohio Producing Co., Bedell 14	10	332
Rex Pyramid Oil Co., Blare 4	*	832
P. P. Murphy et al, Walker	5	322

North Louisiana

Caddo Parish (Pine Island)—

Chastain & Meier, Crystal O. & R. Corp. 1, 24-21n-16w	25	1012
R. B. Creager, Muslow A-1, 31-21n-15w	25	1569
Juan & McFatrick, Hobbs A-2, 28-21n-15w	30	1578
Texas Co., Noel B-24, 14-21n-15w	75	1700

La Salle Parish (Olla)—

Arkansas Fuel Oil Co., Cruse 1, 19-10n-3e	240	2246

Ouachita Parish (Monroe)—

Interstate Nat. Gas Co., Fee 98, 44-19n-3e	3.0	2194

Sabine Parish (Zwolle)—

Major Oil Co., La Roux 1, 36-8n-12w	*	2630

South Louisiana

Anse La Butte—

Glassell & Glassell, Moresie A-2	325	4588
Stanolind, Bergeron 1	256	3443

Bay St. Elaine—

Jefferson Lake Sulph. Co., Royalties Co. 1	*	1260

Chalkley—

Humble, Hanszen 11	240	8603

Cheneyville—

Amerada, Well 11	288	5715

Eola—

Amerada, Cerami 5	220	6449

Erath—

Texas, Trahan 1	*	11,771

Fausse Point—

Texas, State 7	25	7450

Gillis—

Union Sulphur McIver 3	6	7140

Grand Lake—

Superior, State 14	212	8990

Golden Meadows—

Texas, Falgout Holding 14	422	7940

Grand Bay—

Gulf, State 8 QQ	300	8102

Jeanerette—

Hammil & Smith and De Arman, Eves 1	*	3256

Kenilworth—

Vendome, Kenilworth 3	*	11,900

LaFitte—

Texas, LL&E State 17	768	10,188

La Fourche Crossing—

Hawkins & Grubb, Thibodeaux 1	240	11,112

Port Barre—

Texas, Botany Bay Lbr. Co, 29	731	6148

South Jennings—

Stanolind, Atwell 1	15	9668

Starks—

Burton & McLean, Industrial Lbr. 2	*	6665

Sulphur—

Union Sulphur, Fee 869	329	.....

Ville Platte—

Continental, Corell 4	287	10,351

White Castle—

Shell, Forest Home 2	668	6481

Woodlawn—

Union, Miller 1	50	9594

Jefferson Davis Parish—

Continental, Nibletts Farms 1, Hayes area	*	11,624

Michigan

Arenac County—

W. E. Ross, Peavy 2, csw ne 9-20n-4e	1.5	1166

Gladwin County—

C. W. Teater, Domokos 9, cws nw 11-18n-1w	106	3636
Sun, State A-1, se se ne 1-19n-1w	*	3525

Jackson County—

A. G. Morency, Reed 1, sw sw se 13-4s-2w	*	1510

Kent County—

Mesel & Spielbergs, Vandercook 1, sw se nw 7-6n-10w	*	610
R. E. King, Walsh 2, sw ne ne 31-7n-12w	60	1875
Smith Pet. Co., Livingston 4, nw ne se 32-7n-12w	75	1871
Wolverine Nat. Gas Corp., Burgess 4, ne ne nw 32-7n-12w	25	1906

Mecosta County—

Weber Oil Co., Watcher 1, se se nw 20-16n-10w	*	3420

Missaukee County—

Taggart Brothers, Quist 29, cnw 22-21n-7w	2.0	1400

Montcalm County—

Belvidere Oil Co., McGowen 1, nw sw se 17-12n-5w	*	1220

Ottawa County—

L. D. Hendershott, Johnson 1, sw sw sw 13-7n-13w	*	1930
Gordon Oil Co., Connell 2, ne se se 24-7n-13w	110	1924

Saginaw County—

Freeman Oil Co., Krych 1, ne se se 26-11n-2e	*	3025

Isabella County—

Archie Henry, Wyant 1, cs½ nw sw 5-13n-5w	*	3703

Mississippi

Clarke County (Wildcat)—

Ark. Miss. Corp., Long-Bell Lbr. Co. 1, 35-3n-17e	*	7011

Yazoo County (Wildcat)—

Leon Dunn, Pepper 2, 26-12n-2e	*	4943

Yazoo County (Tinsley Dome)—

E. C. Johnston, Brumfield B-4, 2-10n-3w	500	5500
Hassie Hunt, Lammons B-1, 1-10n-3w	280	5460
Slick-Urschel Oil Co., Fee 3, 11-10n-3w	360	4542

Montana

Glacier County (Cut Bank)—

Glacier Prod. Co., Bonnett 5, cnw se 4-32n-5w	262	2995
Texas Co., Unit 8, cnw ne 9-32n-5w	34	3121

Toole County (Kevin-Sunburst)—

Enfield Oil Co., Zachor 2, csl nw nw 20-35n-1w	50	1597
Imperial Craig Oil Co., Martin 4, cnw se 18-35n-1w	60	1635

New Mexico

DeBaca County (Wildcat)—

B. C. Armstrong et al, Overton 1, c se nw 34-2n-21e	*	1000

Eddy County—

Danciger O&R, Turner 6-A, sw se sw 18-17s-31e	100	3494

Lea County (Hardy)—

Skelly, Hill 6, lot 4, 6-21s-37e	145	3728

Lea County (Mattix)—

Continental et al, Jack 4-A-29, ne sw se 29-24s-37e	199	3589

Lea County (Vacuum)—

Magnolia, State-Bridges 68, c se se 15-17s-34e	85	4742

United States Well Completions—*Continued*

New York

Allegany County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Victor Oil Co., Whitcomb farm, Bolivar	4	1345
R. B. Moore et al, Daggett farm, Bolivar	6	1369
LeMont Oil Co., Pierce farm, Wirt	5	1362
A. L. Shaner, Parker farm, Bolivar	4	1342
Riley Allen Est. No. 1, Allen farm, Scio	7	1062
Bradley Prod. Corp., Monder farm, Alma	5	1310
Richart & Haskins, Simeon Smith farm, Alma	5	1525
Marsh Oil Co., Withey farm, Bolivar	7	1361
H. W. Patterson, Coyle-Witney farm, Amity	5	856
Water Intake Wells—		
Trio Oil Co., Big Four farm, Bolivar	...	1280
R. B. Moore No. 6, Daniels farm, Bolivar	...	1393
Porge Oil Co., Anderson farm, Alma	...	1365
Bradley Prod. Corp., Monder farm, Alma	...	1273
Otsquago Corp., Pike farm, Alma	...	1388
N. V. Franchot, Reddy farm, Alma	...	1430
McEnroe & Brown, Bellamy farm, Alma	...	1275
Dick Oil Co., Cameron farm, Bolivar	...	1419
L. H. Thornton et al, Brown farm, Alma	...	1290
H. W. Patterson, Ockerman-Fuller farms, Amity	...	852
Ada M. Gray et al, Smith & Gray farm, Genesee	...	1425
Messer Oil Corp., Courtney Hollow farms, Genesee	...	1352
Courtney Hollow farms, Genesee	...	1359
Courtney Hollow farms, Genesee	...	1387

Ohio

Athens County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Gross & McCune, Antle 7	8	420
A. D. Townsend, Grimm 1	*	1610
Knox County—		
Knox Exploration Co., Samples 1	*	2780
Licking County—		
Eugene Ridgway, Richards 1	10	832
Stricker & Armbuster, Patton 1	5	793
Ohio Fuel G. Co., Wilson 1	¶1.40	2570
National Dr. Co., Baker et al 1	¶.45	2375
Lorain County—		
Forrest Oil Co., Wise 2	50	345
Wise 3	50	164
Noble County—		
J. E. Lumbatis, Booth 1	2	930
Pepper 1	2	875
Perry County—		
Palm Oil Corp., Davis 1	10	3275
Gas Prod. Co. of Ohio, Lattimer 3	¶.25	3095
Wm. Glass, Brown 1	¶.20	955
Hoover Bros., Adcock 1	*	940
Washington County—		
Hall & Henning, Ludington 1	*	1520

Oklahoma

Beckham County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Coogan, Kinchen 1, se se se 4-9n-25w	*	3718
Caddo County—		
Ohio, Lackey 8, sw se nw 11-5n-9w	554	3360
Carter County—		
C. Carter, Orms, near csw sw sw 34-3s-3w	*	1725
Gibson & Jennings, Griffin 1, se nw se 2-4s-2w	*	2014
C. Carter, Mobley 5, near cne ne sw 13-4s-3w	*	1310
Cleveland County—		
Delaney, Bakhaus 1, se se ne 12-7n-2w	*	7699
Creek County—		
Viersen, Scott 1, nw ne sw 24-14-10e	50	3225
Big Four, Copeland 4, sw sw nw 24-19-7e	*	2808
Grady County—		
McCasland, Horton 1-B, nw se nw 8-3n-5w	20	2748
Carter, Bocher 2, cw½ sw sw 16-25-3w	*	5464
Haskell County—		
Utilities Prod., Anderson 1, cse se 23-8-20e	¶.33	867
Kay County—		
Continental, Delodge 12, csw nw 17-25-2e	14	3754
Lincoln County—		
Allied Material, Schooland 1, nw nw se 16-13-6e	¶14.	4052
Summit, Cleer 2, se ne sw 6-15-5e	*	3668
Muskogee County—		
Leasburg, Flowers 1-B, se sw sw 5-13-16e	*	1776
Okfuskee County—		
Wells, Fletcher 1, sw se se 24-10n-11e	9	2021
Oklahoma County—		
Phillips, Ellison 2, ne ne sw 27-12n-3w	1074	6590
Okmulgee County—		
Chain, Colbert 3, sw sw ne 5-14-14e	*	1760
Kirkland, Green 4 (formerly 5) cs½ ne ne	15	1634
Osage County—		
Moore Oil, Farm 1, sw sw nw 35-22-8e	165	2012
Ohio Osage, East Hominy, sw sw nw 29-22n-9e	*	2343
Continental, Falls Dome, nw se ne 32-24n-8e	*	2700
Millard, Farm 3, sw se se nw 3-28n-11e	88	963
Pawnee County—		
Ross & Brimm, Sublet 1, nw sw nw 21-20-7e	*	620
Greer, Ruble 1-A, ne nw nw 7-20n-8e	*	450
Payne County—		
Texas, Vaughn 1, ce½ se sw 2-17n-1e	800	4954
Pontotoc County—		
Senora, Summers 2, nw sw sw 25-5-4e	100	2580
Patterson-Grisso, Norvell 1, nw nw ne 35-5-4e	30	2637
Seminole County—		
Fleets, Barkus 1, nw nw ne 10-5n-5e	*	2695
Stephens County—		
Circle, Parker 1, se ne nw 16-1S-5w	*	650
Edwin Bristow, Dameron 1-A, nw nw sw 25-2s-6w	*	1970
Wagoner County—		
Grimm, Penson 2, ne sw se 16-18n-18e	*	502

Pennsylvania

BRADFORD DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Lane No. 1 et al, Bing 371	2	....
Andrus & McDowell, Bing 326	2	....
C. A. Duke estate, D. C. & B.	3	....
Penn Valley Crude Oil Corp., fee	2	....
Forest Oil Corp., 2 wells	2	....
Forest Pet. Corp.	1	....
Niagara Oil Corp., 3 wells	3	....
Ryder Scott Co., fee	2	....
Mathew Linpert et al, Lippert	7	....
Bradford Tr. Co., 16 wells	16	....
Water Intake Wells—		
Pine Run Oil Co., Bing 130-1-2-3-4-6	...	....
Forest Oil Corp.	...	....
Forest Pet. Corp., 2 wells	...	....
Niagara Oil Corp., 3 wells	...	....

MIDDLE DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Vanango Oil & Land Co., Lower Reno	½	....
Second National Bank, Titusville, Roess, Bruthsche & Turk	1	....
C. S. Ehret, G. V. Stull	¾	....
G. L. Rhodes et al, Rhodes	1	....
Cities Service, Hamilton	5	....

SOUTHWEST PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegheny County—		
Larkin et al Church 2	15	1843
Indiana County—		
T. W. Phillips G. & O. Co., Richard 1	¶.12	3270
R. & P. Coal Co. 1	*	3266

North Texas

Archer County (Hull-Silk)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Ed. Cox & Hamon, Anderson 6	1128	4415
Moran Bros. Inc., Ford 1	*	4537
Phillips Pet. Co., Little-Novella 2	840	4417
Archer County—		
Bridwell Oil Co., Dunham 2	8	1423
L. T. Burns et al, Blewitt-1st Nat'l Bank 3	10	1461
Cochran & Cain, Little 7-B	19	538
Ed. Cox & Hamon, Anderson 7	38	1013
Bert Ligon et al, Little 8-B	55	1366
White 4-A	*	1650
Panhandle Ref. Co., Green 46-B	36	1123
Pet. Producers Co., Richardson 7-B	20	1272
Clay County—		
Sussex Oil Corp., Glasgow 7	*	210
Truett & Roach, Roach 1	*	275
Roach 2	*	385
Clay County (Wildcats)—		
Akin-Costley & Dimock, Edrington 1	*	1398
Bridwell Oil Co., Edrington 13	*	1633
E. C. Norwood-Grimes & King Oil Co., Hapgood 1	2094	5984
Cooke County—		
Trumter Pet. Corp., Stacey 3-B	15	737
Cooke County (Walnut Bend)—		
Magnolia, Ramsey 7	520	4754
Sun Oil Co., Snuggs 5	384	4905
Jack County—		
Maracaibo Oil Explo. Corp., Owens 2	340	3130
Panhandle Ref. Co. et al, Derrick 1	672	3150
Three-B Inv. Co., Matlock 2-B	216	3195
Montague County (Wildcats)—		
Sinclair Prairie, Benton 1 (pb to 5135 ft)	472	5416
Milam 1	*	6000
Wichita County (K-M-A)—		
Fain-McGaha Oil Corp., Griffin 19-B	960	3801
W. H. Hammon et al, Hammon 2	648	4093
McCarty 7-F	520	3840
Hammon, Hanlon & Buchanan, Fassett-Tuttle 22	432	3995
Hanlon & Buchanan, Fassett-Tuttle 8-G	424	4066
Fassett-Tuttle 10-G	312	4070
Shell & Phillips Pet. Co., Preston 11-A	1136	4015
Wichita County—		
C. W. Clark et al, Warren 2	*	1415
Deaton & Boardman, George 1-B	*	1578
Taylor & Helms, Roller 1	*	1650
Roller 2	*	480
S. H. Walton et al, Gulf Ref. 17	*	885
Gulf Ref. 18	*	850
Gulf Ref. 19	10	584
Gulf Ref. 20	1	613
A. B. Wharton, Jr., et al, Waggoner Est. 9-B	9	1592
Wolf & Hull, Kemp-Kempner 1	19	694
Wichita County (Wildcat)—		
Mason & Edmonds, Minnick 1	*	700
Wilbarger County—		
E. P. Waggoner et al, Waggoner Est. 1-E	*	1900
Young County—		
J. B. Baker et al, Burris 8	*	698
S. D. Glover et al, Johnson 27	9	570
Johnson 28	*	601
Chas. B. King et al, Dalley 3	8	555
Riner & Massle, Logan 3	*	1216

Texas Panhandle

Carson County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Cities Service, Magnolia Pet. 1-F	492	3175
Magnolia Pet. 2-F	175	3184
Shell, Cooper 13-C	413	3155
Cooper 14-C	342	3118
Texas Co., Cooper 11	368	3225
Gray County—		
Adams & Prince, Cantone-Morse 6	75	2545
Cambrian Oil Co., Saunders 3	350	3300
Albert Crenshaw et al, Benton 6	250	3153
Benton 7	500	3140
Gulf, Hughey 2-A	269	3286
I. T. I. O. Co., Smith 14	247	3275
Kewanee Oil Co., McConnell 3	18	3380
Hutchinson County—		
Paloma Oil Co., Lewis 6	408	3070
Harry Stekoll et al, Whittenburg 11-B	42	3080
Texas Co., Garner 10-A	557	3039
Lewis 27	332	3040
Moore County—		
Texoma Nat. Gas Co., Coon 14-M	¶9.5	3400
Wheeler County—		
Homer Eweton et al, Evans 3	20	2402
North Fork Oil Co., Jackson 8	79	2215

Texas Gulf Coast

Ace—

Company, Well and Location	Init. Prod. Bbls.	Depth
Shell, Kirby-West 2	170	9665
Angleton—		
Humble, Mettler 2	*	10,605
Anahuac—		
Gulf, Syphrett 7-D	730	7145
Humble, Drought 4	665	7142
Bay City—		
Skelly, Moore 7	298	8500
Esperson—		
General Crude, Esperson B-12	175	6807
Rockland—		
Boykin Heirs 1	75	1268
Old Ocean—		
Sun, Borsodi 4	120	9376
South China—		
Pan-American, Neale 1	250	7878
Titanic, Fontenot 1	200	7874
Thompsons—		
Gulf, Wolters B-Y-13	117	4315
West Columbia—		
Gulf, Mayo 1	370	5609
Harris County—		
Steger Trahan 1, 4 mi se Humble	†	1100
Matagorda County—		
Texas, Taylor 2, Sugar Valley area	*	9933

East Texas

Kilgore Area—

Company, Well and Location	Init. Prod. Bbls.	Depth
T. D. Humphrey et al, Spear 24 (20.3-ac)	1500	3574
Tomas 2-aa (third hole)	600	3634
Magnolia, Radford 45 (252-ac) water input	*	3838
Producers Inv. Corp., Butts 11 (12½-ac)	1200	3550
Longview Area—		
S. J. Felsenthal et al, Glenn 6 (28-ac)	1500	3611
B. F. Phillips et al, Callum 9 (20-ac)	4500	3658
Cherokee County (Wildcat)—		
Texas Co., Cherokee Dev. Co. 1	*	5114
Franklin County (Talco)—		
Humble, Penn-Humble 20 (700-ac)	367	4291

*Failures; †Junked; ¶Million cu. ft. gas.

United States Well Completions—*Continued*

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Crane County (Sand Hills)—		
Humble, Tubb 39	6096	4395
Crane County (Jordan)—		
Texas Co., University 4-A	1852	3560
Crockett County (Wildcat)—		
Moore Explo. Co.-Olson Oil Co., Hoover 1	53	2150
Ector County (Foster)—		
Great Western Prod., Johnson 2	992	4125
Sinclair Prairie, Johnson 4-C	313	4180
Sunray Oil, Johnson-Landret 2-A	280	4160
Ector County (Goldsmith)—		
Gulf, Goldsmith 295	253	3212
Phillips Pet.-Pure, Cowden 93	1517	4155
Cowden 95	1566	4155
Cowden 96	3181	4173
Ector County (Jordan)—		
Snowden & McSweeney Co., University 4, lse 2	607	3607
Ector County (North Cowden)—		
Barnsdall Oil, Smith 11	907	4210
M. J. Delaney et al, Smith 8	753	4430
Gaines County (Seminole)—		
Amerada, Riley 4	931	5250
Atlantic Ref. Co., Riley 8-B	973	5255
Hockley County (Slaughter)—		
Honolulu Oil Corp., Slaughter 8-21	645	5000
J. W. Murchison et al, Slaughter 6	858	5000
Sid Richardson et al, Slaughter 3-58	1112	4985
Stanolind, Slaughter 11-B	342	5030
Slaughter 14-B	551	4990
Pecos County (Taylor-Link)—		
H. G. Eastham Jr. et al, University 3-C	*	1646
Pecos County (Tobarg)—		
A. J. Rife et al, Tippett-Conoco 17	13	418
Pecos County (Yates)—		
Ohio Oil, Yates 1-D-T	*	295
Scurry County (Sharon)—		
Ordovician Oil, Burney 1	246	2461
Ward County—		
Gulf, Hutchings 138	94	3085
Sid Richardson et al, University-Sun 4-B	408	2735
Winkler County (Keystone)—		
Gulf, Keystone 37	654	3436
Yoakum County (Wasson)—		
Aloco Oil, Willard-Texaco 7-C	797	5215
Anderson-Prichard Oil, Willard-Nelson 2	303	5144
Willard-Spearman 7	1578	5153
Willard Spearman 8	2048	5145
Argo Oil, Comer 5-C	2576	5170
Don Danvers et al, Willard 1-739	955	5200
Honolulu Oil, O'Dowd 1	817	5165
Mabee O&G Co., Willard 5-B	1290	5175
Shell, Baumgart 16-A	1181	5195
Baumgart 16-E	1392	5173
Roberts 10	1264	5194
Yoakum County (Wildcat)—		
Plymouth Oil, Brownfield-Amerada 1	*	5769

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Humble, McGill Bros. 48 (Kelsey)	500	4726
Hidalgo County—		
E. J. Liberty, Doss 1 (WC) Pors. 39 & 40	*	0
H. J. Porter et al, Flores 2 (Samfordyce)	300	4150
Royal O. & G. Corp., Flores et al 1 (Samfordyce)	250	4151
Jackson County—		
W. S. Boyle, Bennview 1 (WC) Tr 35	900	6020
Shell, Stephan 1 (West Ranch)	1200	5761
Jim Wells County—		
Anderson-Prichard, Mueller et al 3 (Wade City)	450	4916
Atlantic, Mueller 1 (Wade City)	70	4914
Bridwell Oil Co., Hoffman B-3 (Ben Bolt)	650	5282
Henderson Coquat, Adams 1 (Alfred)	*	5292
B. F. Cowan, Engleking 1 (Premont)	28	2362
Rodney Delange, McNeil 12 (Wade City)	700	4931
H. H. Howell, Cook 1 (East Alice)	100	5647
McCloud & Bluntzer, Pride 1 (Premont)	30	2380
Nueces County—		
Gulf Plains Corp., Dryden & Mosely 3 (Stratton)	200	4772
Sinclair Prairie, State 1 (694) (E. White Point)	¶9½	7632
Refugio County—		
Coronado Corp., Michan 3 (GS) (La Rosa)	200	5906
San Patricio County—		
W. S. Boyle, Hodges 1 (WC) Victoranio Juarez Sur	*	5003
Commercial Drlg. Co., Hunter 1 (White Point)	*	5685
Midway Victory Oil Co., Floerke 3-B (Midway)	200	5373
Southern Minerals Corp., McCampbell Est. 10 (McCampbell)	175	7200
Victoria County—		
Transwestern Oil Co., McFaddin Est. 14-E (McFaddin)	350	6452

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Cox & Hamon, Gruy Est. 3 (Rancho Solo)	*	2729
Cox & Hamon & Gorman-Yoakam, Gorman-W. K. Hoffman 7 (119) (Tarancahuas)	177	2045
Rosemary Hoffman 4 (109) (Tarancahuas)	166	2105
Sophie Hoffman 9 (109) (Tarancahuas)	133	2098
Diamond Half Oil Corp., Benedum & De Cantu 1 (WC) sur 564	*	3027
Magnolia, D. C. R. C. 7 (132) (Cedro Hill)	43	1456
Providence Oil Corp., Driscoll 1 (WC) sur 138	*	4208
Texas Co., D. C. R. C. 39 (190) (Cedro Hill)	53	1443
Jim Hogg County—		
Sun, Thaxton 3 (Colorado)	250	2977
McMullen County—		
H. F. Baker, Galloway Est. 1 (WC) sur 34	*	1948
Starr County—		
Humble, Montalvo 1 (Sun)	57	5000
P. R. Rutherford & K. D. Owen, Standard Trust Co. et al 1 (Boyle)	*	4500
Webb County—		
F. M. Boso, Adami 2 (Adami)	35	1000
W. H. Holland & Jay Simmons, Bruni Est. 1 (Glen)	165	2172
Interstate Minerals, Inc., Lopez 50 (Glen)	2900	2175
O. W. Killam, Bruni Est. 4 (Glen)	150	2186
Magnolia, Brennan-Benavides 48 (Cole-O'Hern)	¶2	3001
S. S. Benavides 7 (West Cole)	35	2361
Transwestern Oil Co., A. M. Bruni Est. 5 (Glen)	750	2170
Zapata County—		
J. P. Nash, Tr. Alice D. Haynes 36-A (Comitas)	15	1139

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bexar County—		
Southwest Drlg. Co., Covell 1 (Gas Ridge)	3	740
Caldwell County—		
R. R. Ogden, Talley 11 (Dale)	*	2391
Guadalupe County—		
Bertha Oil Co., Achterberg 1 (Elm Creek)	*	888

Utah

Company, Well and Location	Init. Prod. Bbls.	Depth
Daggett County (Clay Basin)—		
Mountain Fuel Supply, Government 1, cse ne ne 19-3n-24e	¶15.0	6005

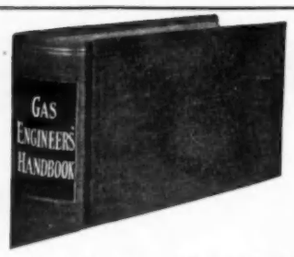
West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
So. Penn Nat. G. Co., White 1	¶.22	3265
Owen-Libby-Owens, Peytona Coal Land 33	¶.08	4118
Cabel County—		
W. Va. G. Co., Wilson 1	¶.05	3435
Clay County—		
Pitts. & W. Va. G. Co., Farr 7738	*	1968
Doddridge County—		
O. E. Garrett, Jr., Gainer 2	2	2900
Gilmer County—		
McCall Dr. Co., Napier 4	¶1.09	1587
Fling 1	*	2115
Kanawha County—		
W. Va. G. Corp., Thaxton et al 38	¶3.00	5085
Columbian Carbon Co., Hughart 1	¶2.83	5086
Pleasants County—		
W. C. Patterson, Conway 1	4	1612
Putnam County—		
Lick Creek G. Co., Wood 1	¶.14	2167
Roane County—		
T. W. Kennedy et al, Winters 3	¶.50	1590
Wetzel County—		
G. B. & A. C. Patterson, Fowler Hrs. 1	*	2777

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Natrona County (North Geary)—		
Continental, McGrath 1, cnw sw 15-34n-78w	*	8343
Niobrara County (Lance Creek)—		
Continental, Joss 7, cnw sw ne 6-35n-65w	528	5149
Sublette County (LaBarge)—		
Marvel Oil Co., Government 2-G, cnl ne se 28-27n-113w	100	1174

*Failures; †Junked; ¶Million cu. ft. gas.



GAS ENGINEERS' HANDBOOK

Prepared by Gas Engineers' Handbook Committee of The Pacific Coast Gas Association, San Francisco, California

Here is a comprehensive and authoritative manual, giving the gas engineer a reference tool comparable to the standard handbooks in other fields of engineering. Now in one volume are brought together a great many of the constants and formulas which the gas engineer uses most frequently in his work. Every phase of the field is covered, including fundamental mathematics; properties of materials, liquids, and gases; heat and combustion; production; testing and measurement; transmission and distribution; and utilization, both industrial and domestic.

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1. Mathematical and Conversion Tables and Graphs
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4. Fuels and Combustion
5. Production of Gas
6. Testing and Measurement
7. Transmission and Distribution
8. Utilization of Gas

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Pumps and Sucker Rods

Axelson Manufacturing Company, Box 98, Vernon Station, Los Angeles, has issued a bulletin captioned "Axelson Has What It Takes," describing and picturing manufacture of deep well plunger pumps at the company's Los Angeles plant and sucker rod production at its St. Louis plant.

Packing

The Garlock Packing Company, Palmyra, New York, has issued a 12-page bulletin on its new lattice-braid packing. Features of the product and its construction are illustrated, and several types and kinds of materials in which it is available are described.

WILDCAT REPORT
New Starts and Completions

ARKANSAS

COMPLETION

Columbia County—Barnsdall's El Dorado and Wesson 1, c nw sw 5-19-18, sw, abnd 8760 ft.

CALIFORNIA

COMPLETIONS

Kern County—General Petroleum Corp.'s Twisselman 1, sec 31-27-19, abnd 2463 ft.

Fresno County—Amerada Petroleum Corp.'s S. P. L. Corehole No. 38-9, sec 9-19-16, McLure shale 6570 ft; Temblor, 6825 ft; Kreyenhagen 8557 ft. Abnd, 8758 ft.

Fresno County—Shell Oil Co.'s No. 45-2, sec 2-20-15; pumping 37 bbls daily, 26 gravity, cut 6.5%, 3745 ft; Coalinga shallow area.

San Mateo County—Wilshire Oil Co.'s Cowell 3, sec 17-6-5; abnd 1954 ft.

KANSAS

FIRST REPORTS

Barber County—Transwestern's Buck 1, cs½ sw ne 35-30-14w, lcn.

Cowley County—Sage, Murfin & Markey's Carlson 1-A, cwl sw sw 21-30-3e, sp.

Rooks County—Aylward's Richards 1, cn½ nw sw 31-10-18w, rur.

COMPLETIONS

Barton County—Finston & Co.'s Pichner 1, cel ne sw 24-16n-11w, Arbuckle 3376 ft, treat 1000 gal, abnd at 3400. Herndon Dr. Co.'s Hitchman 1, ce½ ne nw 1-17-12w, Lansing 3108 ft, Arbuckle 3338 ft, abnd 3390 ft.

Cowley County—R. M. Stewart & R. A. Whorton's Emhke 1-A, cw½ nw nw 14-32-3e, Bartlesville 3130-34 ft, Mississippi 3146 ft, Arbuckle 3451 ft, sw, abnd 3457 ft.

Ellsworth County—W. C. Emerich et al's Hagy 1, cw½ sw ne 20-16-10w, Lansing 3020 ft, Arbuckle 3325 ft, cored 3344-49 ft, fair saturation, treat 1000 gal, 2000 gal, pumping pot 240 bbls 43-gr, td 3349 ft.

Russell County—Jones Bros.'s Mahoney 1, csl sw sw 8-14-12w, Lansing 2943 ft, treat 4000 gal, pumping pot, 559 bbls 42-gr, td 4984 ft.

NORTH LOUISIANA

FIRST REPORT

DeSoto Parish—A. A. Lindahl's Cook Estate 1, nw ne 32-13n-14w, mat for 3100-ft test.

SOUTH LOUISIANA

FIRST REPORT

St. Mary Parish—Texas Co.'s State 1, 18 mi se Franklin, Rabbit Island area, lcn.

COMPLETION

Jefferson Davis Parish—Continental's Nibletts Farms 1, 1-11s-5w, accredited discovery Hayes field March, 1940, when flowed 12 bbl 42-gr dist daily through 3/16-inch ck from 10,758 ft, reworked to eliminate sw, abnd.

MICHIGAN

FIRST REPORTS

Allegan County—A. E. Kopprasch's De Weerdt 1, sw sw ne 14-4n-15w, rig.

Berrien County—J. Warman's Fee 1, sw sw ne 34-3s-17w, lcn.

Kent County—E. R. Roach's Hunsburger 1, se se sw 28-8n-11w, rig.

COMPLETIONS

Gladwin County—Sun's State A-1, se se ne 1-19n-1w, Dundee 3423 ft, abnd 3525 ft.

Jackson County—A. G. Morency's Reed 1, sw sw se 13-4s-2w, Traverse 1509 ft, abnd 1510 ft.

Mecosta County—Weber Oil Co.'s Wachter 1, se se nw 20-16n-10w, Dundee 3413 ft, abnd 3420 ft.

Missaukee County—Taggart Bros. Inc.'s Quist 29, c nw 22-21n-7w, 2,000,000 ft gas in Michigan stray, td 1400 ft.

Saginaw County—Freeman Oil Co.'s Kyrch 1, ne se se 26-11n-2e, Dundee 2868 ft, abnd 3025 ft.

Isabella County—Archie Henry's Wyant 1, cs½ nw sw 5-13n-5w, Dundee 3669 ft, abnd 3703 ft.

MISSISSIPPI

FIRST REPORTS

Attala County—Pioneer Oil Corp.'s Weeks 1, sw sw sw 29-15n-6w, lcn. Clint Crosby's Fee 1, sec 33-13n-5e, mat.

Grenada County—T. F. Tissinger's Gesslin 1, s½ se 7-21n-6e, mat.

Montgomery County—W. O. Allen et al's Palmertree 1, nw sw 30-17n-7e, lcn.

Yazoo County—Edward Deloach's Wilburn 1, se 9-12n-1w, mat. F. E. Smith et al's School Board 1, sw se 16-11n-3w, mat. Kingwood Oil Co.'s Shipp 1, ne sw 4-10n-1e, rig.

COMPLETIONS

Clarke County—Ark. Miss. Corp.'s Long-Bell Lbr. Co. 1, c sw ne 35-3n-17e, elev 331 ft, Selma chalk 2170 ft, Eutaw 3185 ft, Tuscaloosa 3610 ft, abnd 7011 ft, red shale.

Yazoo County—Leon Dunn's Pepper 2, sec 26-12n-2e, abnd 4943 ft.

MONTANA

FIRST REPORT

Toole County—Montana Dakota Utilities Co.'s Churchill 1, csw ne 19-33n-2e, Devon area, dr 100 ft.

NEW MEXICO

COMPLETION

DeBaca County—B. C. Armstrong-Compton & White's Overton 1, c se nw 34-2n-21e, abnd 1000 ft.

OKLAHOMA

FIRST REPORTS

Caddo County—Stephens' Lankford 1, se se nw 6-6n-9w, pits.

Lincoln County—Vierson's Bell 1, sw sw ne 5-14n-5e, rig. Wilcox's Murphy 1, ne se sw 7-14n-6e, cellar.

Okmulgee County—Sheridan's Hayden 1, ne nw sw 4-15n-12e, mach.

Pontotoc County—Star & McBride's State-Bayless 1, se se nw 32-5n-4e, lcn.

Pottawatomie County—Smith's Brown 1, ne se ne 6-7n-4e, spud.

Tillman County—Helf's Ball 1, ne nw sw 30-1n-17w, lcn.

COMPLETIONS

Beckham County—Fred Coogan's Kinchen 1, se se se 4-9n-24w, abnd 3718 ft.

Comanche County—W. L. Lynn's Lowe 1, se nw nw 7-1n-10w, td 256 ft, 8 bbls 32-gr.

Kiowa County—DeBolt's Phipps 1, sw sw se 27-7n-18w, spud and abnd.

Lincoln County—Anderson-Prichard's Smith 1, se sw ne 18-15n-5e, Second Wilcox 4514 ft, pb 3538 ft, abnd 4530 ft. Russell et al's Laughlin 1, sw sw se 35-16n-5e, Oswego 3205 ft, Prue 3285 ft, abnd 3335 ft.

Logan County—Eason Oil's Wells 1, ne nw ne 15-16n-2w, Second Wilcox at 5898 ft, abnd 5920 ft.

Payne County—Summit Dr. Co.'s Arnold 1, nw ne nw 8-19n-2e, Wilcox 4877 ft, Second Wilcox 4962 ft, abnd 4980 ft.

Pontotoc County—Morgan, Flynn's Brown 1, sw sw se 30-3n-5e, Wilcox 1045 ft, abnd in McLish 1435 ft.

Pottawatomie County—Thompson Bros.' Truesdale 1, se se nw 31-8n-5e, Second Wilcox 4432 ft, pb to 4346 ft, swb 9 bbls oil and 54 bbls water, abnd.

Seminole County—Townsend & Shafter's Jackson 1, sw se nw 20-6n-5e, lcn abnd.

EAST TEXAS

FIRST REPORT

Henderson County—E. B. LaRue, Richards & Holloway's Davis 1, E. G. Harris sur, 3 mi ne Stockard, rig, (replaces Rogers 1, abn lcn).

COMPLETION

Cherokee County—Texas Co.'s Cherokee Dev. Co. 1, I&GN Ry sur 118, elev 563 ft, Pecan chalk 3860-4240 ft, Austin chalk 4726-4902 ft, water sand 4904 ft, abnd 5114 ft.

TEXAS GULF COAST

FIRST REPORT

Liberty County—W. P. Luse's Hlavaty 1, Gardner sur, 5 mi se Dayton, lcn 9500-ft test.

COMPLETIONS

Harris County—G. F. Steger's Trahan 1, 4 mi se Humble, Englebert Ruhl sur, Abs 657, jnkd 1100 ft.

Matagorda County—Texas Co.'s Taylor 2, Freeman George sur, Sugar Valley prospect, contr depth 9500 ft, abnd 9933 ft.

SOUTH TEXAS

FIRST REPORTS

Atascosa County—W. J. Walton Drlg. Co.'s Tuerpe 1, Robert C. Rogers survey, 4 mi se Benton, mir.

Duval County—Continental's Robert Driscoll Est 1-B, BS&F sur 481, 1½ mi e Driscoll field, 12 mi sw Benavides, ru. Sam Cunningham's John Dunn 1, 240 ac tr, S. & M. survey 477, Diego Hinojosa Gr, 7 mi e O'Hern field, 8 mi w Benavides, ru. Mllam Drlg. Co.'s Cantu 1, 163.4 ac tr, James F. Mount survey 308, lcn.

Frio County—F. L. Thompson, Jr., et al's Winters 1, I. & G. N. survey 19, 9 mi ne Pearsall, lcn.

Jackson County—S. G. Harrison's Olsovsky 1, lot 9 C. S. Woolfolk subd, I. & G. N. survey, Ab 132, 143.03 ac tr, Sun Farmout, 5 mi ne Lolita, mi.

Jim Hogg County—John Clopton et al's Louis Yaeger 1, blk 7, survey 20, 1½ mi ne Randado field, lcn.

Jim Wells County—H. H. Howell's Clara Driscoll 2, blk 8, H. H. Howell subd Clara Driscoll lands, La Arima Selo Gr, 17 mi sw Alice, ru.

McMullen County—F. & W. Drlg. Co. et al's Nueces Land & Livestock Co. 1, Camilo Mendez survey 142, 4½ mi ne Munson pool, mir.

Nueces County—H. D. & H. Inc.'s State-Cayo del Oso 1, fractional sec 36, Flour Bluff & Encinal subd, 3 mi sw Flour Bluff field, Humble Farmout, dr 875 ft. Stanolind's State

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1, 728.37 ac tr, C. M. van Blucher survey 746, middle of Nueces Bay, 1 mi s E White Point field, dr below 5020 ft.

Webb County—Glenda Oil Co.'s A. M. Bruni Est. 1-B, blk 7, Eugene Garner subd 2 of Reyna Pasture J. V. Borrego Gr, 18 mi sw Aguilares, lcn; 1-B Raymundo Saldivar, blk 6, Eugene Garner subd 1, nw¼, blk 5, survey 657, J. V. Borrego Gr, 18 mi sw Aguilares, lcn.

Wilson County—Texminn Oil Co.'s McDaniel 1, Augustin Garza survey 46, 3 mi e Poth, ru.

Zapata County—T. J. Murray's A. M. Bruni Est. 1-A, blk 39, O. W. Killam subd Blas Uribe tr B-8, J. V. Borrego Gr (40 ac), 13 mi s Aguilares, lcn.

COMPLETIONS

Duval County—Diamond Half Oil Corp.'s Benedum & DeCantu 1, 1 mi w Hoffman field, abnd 3027 ft. Providence Oil Corp.'s Clara Driscoll 1, I. & G. N. survey 138, 3 mi sw Driscoll field, abnd 4208 ft.

Jackson County—W. Stewart Boyle's Bennview Development Co. 1, tr 35, 2nd subd J. M. Bennett ranch, Valentin Garcia Gr, Ab 24, Shell farmout, 1 mi sw West Ranch field, td 6020 ft, flwd 284 bpd, 5/32 in ch, 550 lb T P, 850 lb C P, perf 5462½-68½.

McMullen County—H. F. Baker's G. R. Galloway Est., 1, H.T.C. sec 34, 9 mi ne Munson field, abnd 1948 ft.

San Patricio County—W. Stewart Boyle's Hodges 1, 80 ac lse, Victoranio Juarez survey, 6 mi n Mathis, abnd 5003 ft.

Wilson County—E. E. Young et al's O. D. McMeans 1, 67 ac tr, C. W. Parrott survey, 4 mi n Stockdale, abnd 2105 ft.

WEST TEXAS

FIRST REPORTS

Crockett County—J. K. Hughes Oil Co.'s Shannon 1, se se se lot 4, sec 28, M. T. Wilton sur, blk GG, sp.

Pecos County—Ed. Taubert-McKee & Siemonelt's Crockett 1, 325.4-ac tr, H&TC sec 4½, blk 3, also J. B. Brown sur, rig for 6500-ft test.

Terrell County—E. M. Thomasson Prod. Co.'s Felps 1, sec I&GN sec 73, blk 1, dr 300 ft.

Upton County—B. H. Kean et al's Taylor 1, sw nw sw GC&SF sec 22, blk B-2, cem sur pipe.

COMPLETIONS

Crockett County—Moore Explo. Co.-Olson Oil Co.'s Hoover 1, c ne sw GC&SF sec 16, blk 1, elev 2445 ft, Yates sand 1105 ft, solid lime 1910 ft, pumped 53 bbls 30-gravity oil initial after nitro shot broken pay 1984-2150 ft.

Tom Green County—Ed. Young et al's Pugh 1, nw part 355-ac tr, Jas. Eldredge sur, abnd 250 ft.

Yoakum County—Plymouth Oil Co.'s Brownfield-Amerada 1, c ne sw sec 620, blk D, J. H. Gibson sur, elev 3501 ft, anhydrite 2530 ft, Yates frosted grains 3480 ft, brown lime 4560 ft, solid lime 5030 ft, abnd in sul w 5750-69 ft.

NORTH TEXAS

FIRST REPORTS

Archer County—C. W. Clark et al's Goldsmith 1, east 30 acres w½ blk 6, South Anderson Ranch subdiv, dr 360 ft on 5000-ft test.

Jack County—R. C. Parker et al's Mosley 1, John Harrison sur A-259, a mile w Joplin, lcn 3650-ft test.

COMPLETIONS

Archer County—L. T. Burns et al's Turbeville 1-AA, R. Carson sur, top Bend 4879 ft, abnd 4919 ft.

Clay County—Akin-Costley & Dimock's Edrington 1, F. W. Gassmeyer sur A-894, abnd 1328 ft. Bridwell Oil Co.'s Edrington 13, H&TB sec 35, A-759, abnd 1633 ft. E. C. Norwood-Glen Grimes & King Oil Co.'s Hapgood 1, blk 61, Marion CSL sur A-308, Bend lime 5901 ft (log) and 5898 ft (Schlumberger), conglomerate pay 5972-84 ft, flowed 107.1 bbls 47.3-gr oil 1 hr ¾-in tubing choke natural, then 97.3 and 57.4 bbls next 2 hrs ¼-in choke.

Montague County—Sinclair Prairie's Benton 1, 121.3-ac tr, T. R. Jackson sur A-394, 1st Strawn 3230 ft, Bend 5056 ft, pb from Ellenburger 5200-5416 ft to 5135 ft, used squib shot and acid in conglomerate pay 5127-37 ft, flowed 59 bbls oil 3 hrs ¼-in choke; T. H. Milam 1, SEc blk 54, Abel Beason sur A-20, Bend 5590 ft, Ellenburger 5795-6000 ft, pb to Bend for test and abnd.

Wichita County—Mason & Edmonds' Minnick 1, nec sw H&GN sec 35, A-163, abnd 700 ft.

WYOMING

COMPLETION

Natrona County—Continental's McGrath 1, cnw sw 15-34n-78w, North Geary structure, 6 mi ne of Casper, abnd 8343 ft.

Petroleum Exhibition One of World's Fair Highlights

A new, redesigned Petroleum Industry Exhibition, embodying the latest techniques of dramatic presentation, is one of the outstanding displays in the industrial section of the 1940 New York World's Fair.

Designed by Walter Dorwin Teague, the new Petroleum Industry Exhibition brings to life the vivid story of man's conquest of nature and the development of thousands of well-known as well as unfamiliar uses for oil. Striking lighting techniques, a motion picture, animated exhibits and working models are employed to tell the ptroleum saga.

A new method of lighting is employed to illuminate the interior of the blue-toned, three-cornered building. Concealed gold fluorescent tubing envelops the vast interior in soft glowing colors that grow in intensity from irridescent, greenish yellow to the bright orange hue of a drop of oil.

A feature presentation within the building is an all puppet motion picture musical revue, produced by Joseph Losey entirely in technicolor, which depicts the forward march of America and the petroleum industry. One unique feature of the film is the personal appearance, on a platform directly in front of the screen, of Pete Roleum, hero of the screen play. Acting in the capacity of host, he points out the various highlights of the exhibition. New music has been written for the film by Tom Bennett, radio composer.

Set along the sides of the building are huge oil tanks, showing the direct link between petroleum and the nation's home and business life. A filling station in operation with stylized gas pumps, a 7-foot automobile, station attendant, an actual airplane, the interior of a factory at work, and a day on an American farm, all portray the uses of oil in the country's domestic and industrial life. Realism is the keynote of these tank exhibits which will be interpreted to the public by commentators.

Fifteen oil companies are participating in the Petroleum Industry Exhibition, including, The American Oil Company, The Atlantic Refining Company, Cities Service Oil Company, Ethyl Gasoline Corporation, Gulf Oil Corporation, Phillips Petroleum Company, The Pure Oil Company, Richfield Oil Corporation of New York, Shell Union Oil Corporation, Sinclair Refining Company, Socony-Vacuum Oil Company, Standard Oil Company of New Jersey, Sun Oil Company, The Texas Company and Tide Water Associated Oil Company.

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NOTES FOR THE Equipment Buyer and User

Pipe Threader

TOLEDO PIPE THREADING MACHINE COMPANY

A new self-contained 1- to 2-inch ratchet threader, designated Simpact, has been announced by Toledo Pipe Threading Machine Company, Toledo, Ohio.

Toledo's Simpact Threader

The tool uses high-speed steel dies which are changed from one size to another by pushing the size selector buttons and slipping the dies in the proper steps. The dies are backed by tapered steps to provide smooth, long-tapered threads. A three-jaw rear gripping device is employed, the tool is equipped with three broad faced chuck jaws, graduated guide posts and large winghead thumb screws to provide accurate centering of the tool on the pipe. It is supplied with a 24-inch steel handle.

Steam Drilling Engine

AJAX IRON WORKS

An improved design of its type A 14x14 twin-cylinder drilling engine, to be designated Type B is announced by Ajax Iron Works, Corry, Penna. Removable cylinder liners, centrifugally cast from alloy iron, are used, being pressed into the cylinders and then locked in place. This work is so arranged as to be possible as a field repair, if necessary. Improvement in cylinder lubrication is claimed through the use of coil-type atomizers on the steam manifold, which emulsify the oil to fog form before being released into the steam flow.

Type B includes redesigned valve gear details and steam ports, with larger ports and a valve spool engineered to eliminate wire-drawing. In the new design of straight-line, double eccentric valve mechanism a steel link with flame-hardened wearing surfaces is employed. Link ear pin and line roller pin are identical, permitting interchange and cutting spare part stock. These pins are of nickel molybdenum steel, with case-hardened surface and heat-treated core.

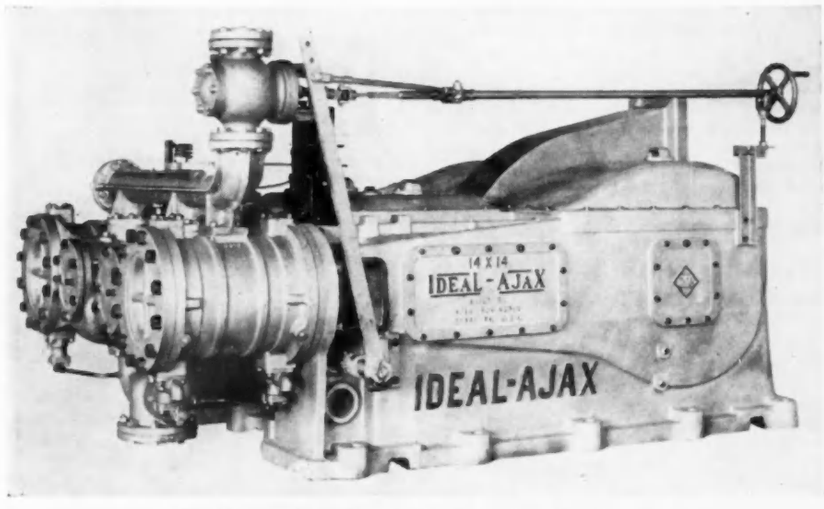
The crankshaft has been increased in diameter and the unsupported span between main bearings shortened in the interests of rigidity.

Reversing of this engine is said to be equalized so that little effort is required for reversing; although either steam or hydraulic power reverse is available if desired.

Foundation bolt holes of Type B are spaced to fit the bolts for a Type A, with the addition of two additional holes in the steel substructure nearest the chain guard.

Glass Pump

Nash Engineering Company, 203 Wilson Road, South Norwalk, Connecticut, has issued Bulletin 313 describing its centrifugal pump of Pyrex heat-, shock- and acid-resistant glass. The unit is described as possessing the mechanical advantages of metal and the chemical advantages of glass. Cast iron brackets and cover plate housing protect the glass parts. With impeller rotating at 1760 r.p.m., capacity is 6000 gallons per hour, and normally the unit can operate with a static pressure on the suction of 20 pounds per square inch, with a discharge pressure up to 50 pounds.

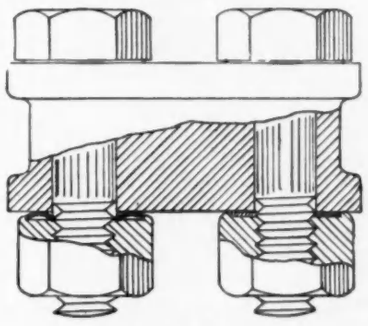


Ideal-Ajax Type B Twin-Cylinder Drilling Engine

Lock Nut

LAMINATED SHIM COMPANY

A self-contained, one piece, all metal lock nut has been announced by An-cor-lox Division of Laminated Shim Company, 64 Union Street, Glenbrook, Connecticut. Designated An-cor-lox lock nut, it utilizes a locking principle designed to obtain effective, positive and locking of the nut to the bolt, not to the work.



Laminated Lock Nut

To apply, the nut is spun on the bolt and drawn up to the desired degree of tightness, where the nut locks itself automatically to the bolt. An arcuate-shaped metal locking ring in the bottom of the nut is expanded by the locking pressure into the root of the bolt thread and against the nut rim. No special length of bolt is required as the nut is adapted even to short bolts.

The nut is designed so as not to damage the bolt thread nor mar the surface of the work, and the same nut can be used time and time again without loss of locking effectiveness.

An-cor-lox lock nuts are available in all standard sizes and in all metals. They may be obtained packed in standard packages, or in bulk in larger quantities.

Coated Valves

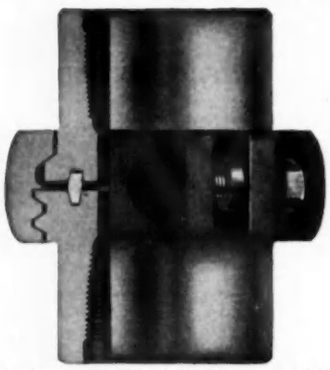
MERCO NORDSTROM VALVE COMPANY

A coating process to permit a lubricated plug cock valve to handle services where temperatures run as high as 1000° F. has been announced by Merco Nordstrom Valve Company, 400 Lexington Avenue, Pittsburgh.

Designated Merchrome, the process employs a welded alloy coating applied to the rotating surfaces of the plugs and bodies, and in some cases other parts of the valves. The coating, having a hardness of 54 on the Rockwell C scale, is described as being corrosion-resistant and having a low coefficient of friction.

For high-pressure service, the plugs of the valves are lapped under heat into the bodies at the temperature corresponding to the service for which they are intended. This step is to provide a means of securing an accurate

Red-Rex
QUICK-JOINT
PIPE UNIONS



High Pressure Steel Unions — 3,000 lbs. and 6,000 lbs. test. Renewable seal ring with three tapered sides gives leak-proof joint. One straight side secures seal ring in one hub. Scientifically designed threads allow for contraction and expansion; equalize pressure at all points; line up off-center hubs.

Completely described in 1940 Composite Catalog. See pages 1808-1809.

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NOTES FOR THE Equipment Buyer and User

Merco Nordstrom's Merchrome-coated valve, showing coated plug at left before machining, and at right after machining, with plug body in the center.

fit between the plugs and bodies at the operating temperature, and to insure smooth operation. The valves are tested before shipment with hot oil at temperatures up to 600° F., and under pressures equivalent to the intended operation pressure.

The Merchrome-coating has been factory and field-tested for the past two years.

Safety Belt

STRAUS-BODENHEIMER COMPANY

Improvements in its Model 15 derrickman's safety belt designed to extend its useful life and increase its safety factor have been announced by Straus-Bodenheimer Company, Houston.

Straus-Bodenheimer Safety Belt

The belt is made of a stitched fabricated double-ply combination linen webbing described as highly resistant to oil and water absorption and deterioration. It employs a clasp designed to provide instant release for the workman in an emergency, and all metal parts are steel forgings. Laps are machine sewed and hand riveted.

Welder

ERGOLYTE MANUFACTURING COMPANY

A new welder, featuring all controls and sockets in full view on a sloped panel to eliminate the necessity of crouching or squatting to select heats or make adjustments, has been announced by Ergolyte Manufacturing Company, 3644 Lawrence Street, Philadelphia. The panel provides means for selecting heats in gradual steps over a wide range proportioned to correspond to commercial gauges of metal handled.

With insulation of double spun glass, the welder employs a broken wave current produced by a special winding designed to make it stable and quiet in operation regardless of how unsteadily the electrode is held, providing smooth uniform beads and fillets free from undercutting.

Current required never exceeds 50 watts. The welder is supplied in two models, 160 with a current range of 15-160 amperes, and 250 with a current range of 15-250 amperes. It operates on single-phase, or one phase of two- or three-phase current, and is furnished with helmet, rubber-covered cables, electrode holder and assorted sizes of electrodes.

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CONTROL OF FLOW THRU FORMATION
REGISTERED PROFESSIONAL ENGINEERS

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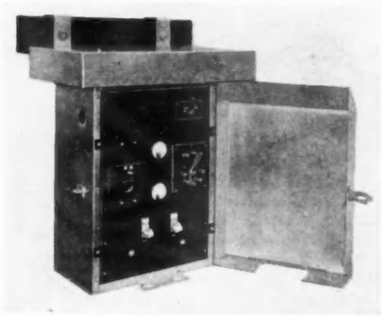
NO-SMOKE
STANDCO BRAKE LINING
for the easiest brake known. It "feeds off" evenly. Standco never scores brake rims. See page 2100, Composite Catalog.
Standco Brake Lining Co.
HOUSTON

NOTES FOR THE Equipment Buyer and User

Cathodic Protection

ELECTRICAL FACILITIES, INC.

A cathodic corrosion eliminator designed for pipe protection and embodying selenium rectifier stacks has been announced by Electrical Facilities, Inc., 4224 Holden Street, Oakland, California.



Rexselen Cathodic Corrosion Eliminator

Designated Type CB Rexselen corrosion eliminator, the unit has no moving parts, cooling fans nor blowers. One unit is rated at 8 volts, 50 amperes DC and is for operation on single-phase AC current supply. It measures 28 inches high, 21 inches wide and 15 inches deep, and weighs 110 pounds. It may be adjusted by transformer taps to a DC output as low as 0.7-volt. Other units are available in capacities from 20 to 200 amperes.

The control panel is equipped with AC magnetic circuit breaker with time delay, ammeter and voltmeter, tap changing link switch, and solderless DC terminals. The eliminators feature a Thermotrol for protection against damage from overloading or operation in abnormally high air temperatures. They are built as a unit and mounted in a ventilated weatherproof steel cabinet designed for out-door mounting on a pole or wall. Indoor models are also furnished.

Hercules Announces Promotions For Johnson and Jappe

Hercules Powder Company, Wilmington, Delaware, has announced appointment of J. B. Johnson, former director of purchases, as assistant general manager of the explosives department, and K. W. Jappe, former manager of the company's plant at Port Ewen, New York, as director of purchases to succeed Mr. Johnson.

Johnson, a graduate of the Colorado School of Mines, was superintendent of the Emporium, Pennsylvania, plant of Aetna Explosives Company when Hercules Powder Company acquired that company in 1921. He remained in that capacity until 1930, when he was appointed superintendent of an explosives plant at Hercules, California. In 1935, Johnson became assistant manager of the San Francisco office, and in 1938 was made manager. In 1939, he came to Wilmington as director of purchases.

Upon graduation from Stevens Institute of Technology, Jappe engaged in industrial engineering work. He joined the explosives department of Hercules Powder Company in the capacity of industrial engineer in 1938, and became manager of the blasting cap plant at Port Ewen, New York, in 1939.

Wise and Turner Join Engineering Laboratories Sales Staff

James Orr Wise

James Orr Wise, former electric meter engineer for Cia Venezolana De Electricidad in South America, and since 1936 a district sales representative for oil well pumps, has joined the sales engineering staff of Engineering Laboratories, Inc., Tulsa. Wise attended Western Military Academy and was an engineering student at Kansas University. He will cover Kansas, Illinois, Missouri and Wyoming.

Charles W. Turner

Charles W. Turner has joined the sales engineering staff to cover Texas, Mississippi, Louisiana and Arkansas, with headquarters in Houston. Active in oil equipment merchandising since 1937, he attended the engineering schools at Kansas State and the University of Oklahoma.

For the present, Wise and Turner will be actively engaged in introducing the new subsurface recording equipment designed by Humble Oil and Refining Company, and manufactured, sold and serviced by Engineering Laboratories, Inc.

Bovaird Supply Names Don Davis Representative at Hays, Kansas

The Bovaird Supply Company has announced appointment of Don L. Davis as sales representative at Hays, Kansas.

Don L. Davis

Davis began his business career in 1925 with Jarecki Manufacturing Company at Augusta, Kansas, and in 1927 he went with The Pure Oil Company to serve in the material, accounting and purchasing departments for five years in Tulsa, Chicago and Houston. He joined the sales staff of General Machine & Tool Company at Wichita, and at the time of his

There is only one thing that will prevent your well from running wild through the tubing due to failure or damage of surface controls. It is the Otis Removable Tubing Safety Valve, built specifically to provide a Sure Safeguard Against Disaster for wells located in war-threatened areas, in townsites and out in water, and for all wells having dangerously high surface working pressures. The Safety Valve is run on a measuring line and locked in the tubing at any depth, set to permit flow at a predetermined rate. Flow in excess of that rate caused by failure of surface controls instantly and automatically closes in your well. After surface connections are repaired, pressures are equalized and flow resumed. Your well, valued at hundreds of thousands of dollars, deserves this low-cost protection.

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Representatives: Otis Eastern Service, Inc., Wellsville, N. Y.
Western Pressure Control, Inc., Los Angeles, Calif.

NOTES FOR THE Equipment Buyer and User

resignation was assistant general manager. Davis will work out of the company's store at Russell, Kansas, but will reside in Hays and make it his headquarters.

Proportional Feed Diagrams

Three additional proportional feed diagrams have been announced by Milton Roy Pumps, 3160 Kensington Avenue, Philadelphia. They show how to feed boiler water treating chemicals against boiler pressure, how to feed two or more boilers from a single-end pump, and how to feed two boilers, individually, or together, from a double-end pump. They are photo-lithographed, 8½x11-inch size, convenient for filing or binding in ring or loose-leaf binders. Earlier diagrams of the series covered proportional continuous feed of sulphuric acid, of chemicals, and shot feed of boiler water chemicals to either feed line or direct against boiler pressure.

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RECTORSEAL is not a petroleum base product, and is insoluble in all petroleum products. It is not affected by salt water or dilute acids, or by steam up to 400° F. It comes to the user in a liquid form and is easily applied with a brush or swab. It forms a plastic, elastic mass which seals quickly and holds the seal indefinitely . . . yet permits easy breakout because it will not "freeze" nor gall, thanks to a natural lubricating quality. Now used world-wide as a leak preventer on threaded and gasket connections. Buy it from your Supply Store. Free sample sent upon request to Rector Well Equipment Co., Inc., Fort Worth, Texas.

RECTORSEAL
THE POSITIVE LEAK PREVENTER

Lee D. Cosart Named Dodge Truck Sales Manager

Appointment of Lee D. Cosart as sales manager of the truck division of Dodge Brothers Corporation has been announced by Forest H. Akers, company vice president.

Cosart resigned as general sales manager of the Plymouth division of Chrysler Corporation to assume his new duties. His first connection with the automobile business was with Dodge Brothers Corporation in Chicago in 1926, and he remained with the company continuously in executive sales capacities in the field and at the factory until appointment as Plymouth division assistant sales manager 2½ years ago, and later as the division's general sales manager.

Los Angeles Nomads See Pictures of Saudi Arabia

Walton Hoag, Jr., until recently with Californian Arabian Standard Oil Company in the Near East, presented a motion picture depicting life in Saudi Arabia and around the eastern Mediterranean Sea and showing operating conditions in Saudi Arabian oil fields before the Los Angeles Nomads July 10.

Erne Bonebakker, B. Bongers and F. W. Van Bilderbeek, all of B. P. M., presented the club with a gavel as a token of appreciation for courtesies extended them by Nomads during their stay in California. A gold band around the head of the gavel bears the inscription, "Ann Onze Zwervende Vrienden," or "To Our Roaming Friends."

Visitors from foreign countries outside were: John S. Aston, Ultramar SAAP, Argentina; Ross E. Colley, Socony-Vacuum Oil Company, Venezuela; F. W. Van Bilderbeek, B. P. M., The Hague; W. R. Young, CASOC; Charles R. McGee, "Solipema," Bahia, Brazil; H. R. Jones, CASOC; E. W. Wilkins, Mene Grande Oil Company, Venezuela; R. W. Perry, Ultramar SAAP, Argentina; R. M. McCool, Trinidad Petroleum Development Company, Trinidad; Bernard Nicalaas van Dieman de Jel, NKPM; Dr. F. Brons, B. P. M.; G. H. L. Schepers, NKPM; E. Lem. Trafford, B. P. M., and A. C. Hall, B. P. M.

Russell Heads Oceco Sales For Johnston and Jennings

The Johnston & Jennings Company, Cleveland, has announced appointment of Murray Russell as sales manager of its Oceco division. For the past ten years, he has been in Bethlehem, Pennsylvania, New York City and Pittsburgh with Byron Jackson Company.

R. B. Putnam Joins Oil City Brass Works Sales Force

Oil City Brass Works, Beaumont, Texas, has announced addition to its sales force of R. B. Putnam.

For the past several years Putnam has been with Frick-Reid Supply Company in the capacities of field salesman and store manager at various points along the Texas and Louisiana Gulf Coast. He will represent Oil City Brass Works in Louisiana, Mississippi and Arkansas.

Airco Announces Retirement Of William W. Barnes

Air Reduction Sales Company has announced retirement of William W. Barnes, manager at Philadelphia. He first became associated with the oxy-acetylene industry in 1910 when he joined Davis-Bournonville Company as Philadelphia sales manager. In 1922, when Davis-Bournonville merged with Air Reduction Company, he became the company's manager at Philadelphia.

Engine Cooling

Pacific Enterprise Products, Inc., 2833 East Eleventh Street, Los Angeles, has issued a 4-page bulletin on its vapor-phase cooling for internal combustion engines. The system is designed to maintain constant and uniform high jacket temperatures regardless of atmospheric temperature, to increase effective cooling capacity of radiators from two to three times, to eliminate crankcase condensation and sludging of oil, to reduce wear of cylinder walls, rings and valves, to prolong life of filter packs, to save fuel by increasing mechanical efficiency of the engine, and to make possible use of sour gas and sewer gas.

Metal Hose

Pennsylvania Flexible Metallic Tubing Company, 72 Street & Powers Lane, Philadelphia, has issued Bulletin G-5 on its line of flexible coupling for air, oil, steam, gases and volatiles. The product is available in five standard joint types, heavy duty interlocked, medium duty high ridge, extra flexible, lightweight squarelocked and unpacked interlocked.

Steel

The Babcock & Wilcox Tube Company, 19 Rector Street, New York, has issued Technical Data Card 8 listing chemical compositions of most S.A.E. steels.

R. B. Putnam Joins Oil City Brass Works

Squeaks from the Bull Wheel

Smart Aleck

A young lady walked into the post office, stopped at the wicket and asked for a 3-cent stamp. The clerk was not in a very good humor, and he snarled, "This is the information window; can't you read?"

The lady proceeded to the proper place, purchased her stamp, and returned. "You say this is the information window?"

"Yup."

"Well, if I mail this letter tonight, will it be in New York tomorrow?"

"Sure."

"That's funny. It's addressed to Indianapolis."

Peculiar

Bagpipes are not peculiar to Scotland, as some people think.

No, they're just peculiar.

Reminder

"The earth shook and cups and saucers flew all over the place."

"That reminds me. I forgot to mail my wife's letter!"

She Knew

"Are you sure your wife knows I'm coming home with you for dinner?"

"She ought to, I argued for half an hour about it."

Easier to Handle

"Daddy is so pleased to hear that you are a poet."

"Fine. He likes poetry then?"

"Not at all. But the last boy friend of mine he tried to throw out was an amateur boxer."

Precaution

"Is this the fire station?"

"Yes."

"I have just had a new rock garden built, and I've put in some new plants, but—"

"Where's the fire?"

"Some of these new plants are very expensive, and—"

"Look here, what you want is the flower shop."

"No, I don't. I was coming to that in a minute. You see, my neighbor's house is on fire, and they asked me to call you, but I don't want you clumsy firemen stomping all over my garden when you come here."

Startled

A group of men at the club were discussing the color of their wives' hair, and Jones was the only one who didn't know.

"You'd better go right home and find out," his friends told him, and Jones figured that was good advice. Entering his house, he saw his wife standing in the living room, looked at her hair and said:

"Brown!"

A voice replied from behind the davenport:

"How the h— did you know I was here?"

Tit for Tat

A little bird told me what kind of a lawyer your father is.

What did the bird say?

"Cheep, cheep."

Well, a duck told me what kind of a doctor your father is.

Tired Easily

"What! Your dyspepsia no better? Did you follow my advice and drink hot water one hour before breakfast?"

"I did my best, doctor, but I couldn't keep it up more than ten minutes."

Selfish

"Darling, what do you suppose I have done today? I have had my life insured."

"That's just like you. All you seem to think of is yourself."

Privilege of Aristocracy

"What happened after you were tossed out of the side exit?"

"I told the waiter I belonged to a very important family."

"So what?"

"He begged my pardon, asked me in again and threw me out the front door."

Squelched

I tell you I won't have this room. I ain't going to pay good money for a pig sty. Just because I'm from the country—

Get in, Mum, this is the elevator.

No Solution

"I'm wanted for bigamy."

"Well, go out and get drunk and you'll forget you're married at all."

"I did that. That's why I'm wanted for bigamy."

Disappointed

"Are you really and truly an English lord?"

"Yes, really and truly."

"I have often thought I should like to see an English lord."

"And now are you satisfied?"

"N—no," replied the little girl, "I'm not satisfied; I'm a good deal disappointed."

Come Again, Please

I should like you all to take more pride in your personal appearance. Now, Johnny, how many collars do you wear a week?

Please, teacher, do you mean how many weeks do I wear a collar?

Repeat Performance

The diner, who had done himself extremely well, called for the manager of the restaurant.

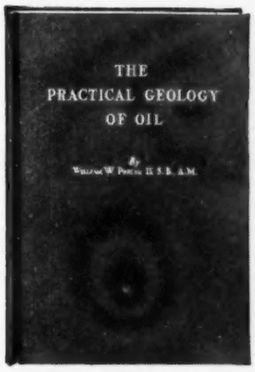
"Do you know," he asked genially, "that I dined here five years ago, and you had me thrown out because I couldn't pay?"

"Indeed, sir?" laughed the manager. "Well, well; please accept my apologies."

"Don't mention it," laughed the diner. "Do it again."

"The Practical Geology of Oil"

By WILLIAM WOOD PORTER, II, S. B., A. M., Consulting Geologist



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*Star Drilling Machine Co.	—
Straus-Bodenheimer Co.	—

T	
E. C. Tecktonius Manufacturing Co.	—
*Templeton, Kenly & Co.	—
Texaco Development Corp.	—
The Texas Co.	—
Texas Electric Steel Casting Co.	—
Texas Iron Works	34
The Thermoid Co.	41
Thompson Tool Co.	—
*The Timken Roller Bearing Co.	—
*Tretolite Co.	—
Trinity Portland Cement Co.	—
*Twin Disc Clutch Co.	—

U	
*Union Wire Rope Corp.	—
*Union Carbide & Carbon Corp.	—
*United States Rubber Co.	—
United States Steel Corp.	—
*Universal Atlas Cement Co.	—

V	
*Vickers, Inc.	—

W	
Warner & Swasey Co.	—
*Waukesha Motor Co.	—
*Well Machinery & Supply Co.	—
Well Surveys, Inc.	—
*Westinghouse Electric & Manufacturing Company	—
*Wheeling Machine Products Co.	—
*The Wheland Co.	—
Wichita Engineering Co.	—
*Wickwire Spencer Steel Co.	—
*J. H. Williams & Co.	—
*Wilson Manufacturing Co.	—
*Wilson Supply Co.	—
Witte Engine Works	—
*Worthington Pump & Machinery Corp.	—
Wyatt Metal & Boiler Works	—

Y	
Youngstown Sheet & Tube Co.	—